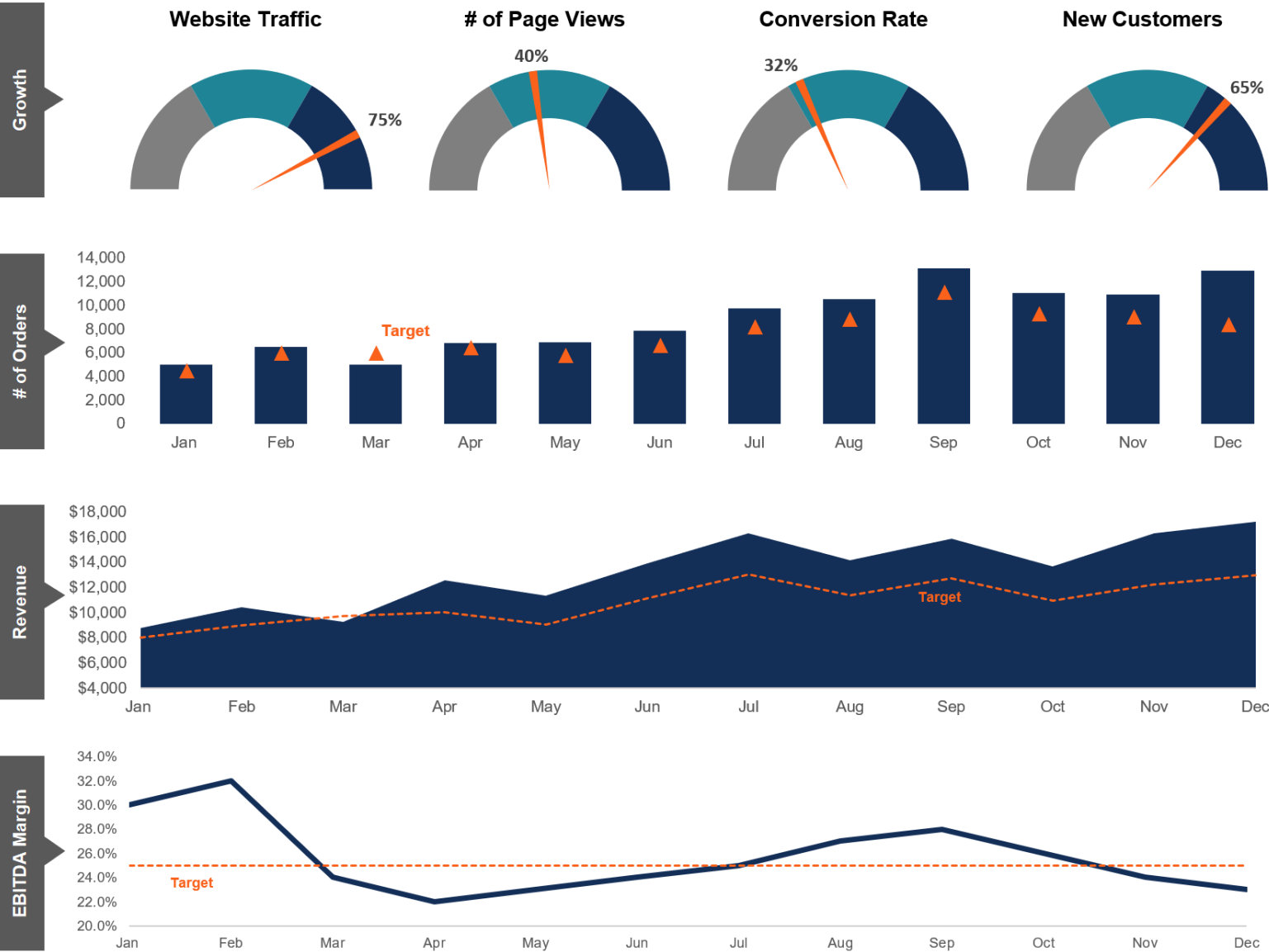
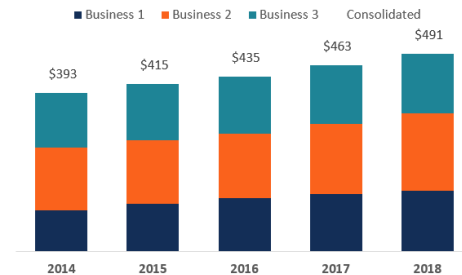




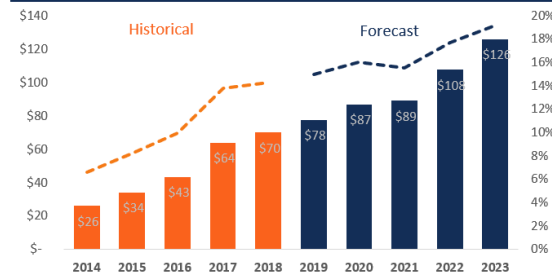
# Dashboards and Data Visualization



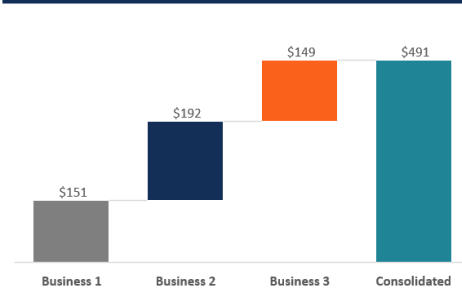
## Business Unit Revenue (\$000)



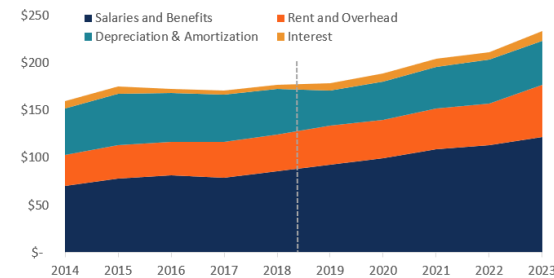
## Profit Margin (\$000)



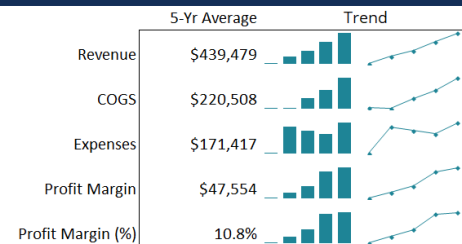
## 2018 Cumulative Revenue (\$000)



## Expenses (\$000)



## Five-Year Performance Summary



## Income Statement FY 2018

|                   | Actual    | Plan      | Variance  | Var%   |
|-------------------|-----------|-----------|-----------|--------|
| Revenue           | \$490,923 | \$475,000 | \$15,923  | 3.4%   |
| COGS              | \$243,130 | \$238,000 | \$5,130   | 2.2%   |
| Expenses          | \$177,712 | \$186,000 | (\$8,288) | (4.5%) |
| Profit Margin     | \$70,081  | \$73,500  | (\$3,419) | (4.7%) |
| Profit Margin (%) | 14.3%     | 15.5%     | (1.2%)    | (7.7%) |

## P&amp;L Summary 2018

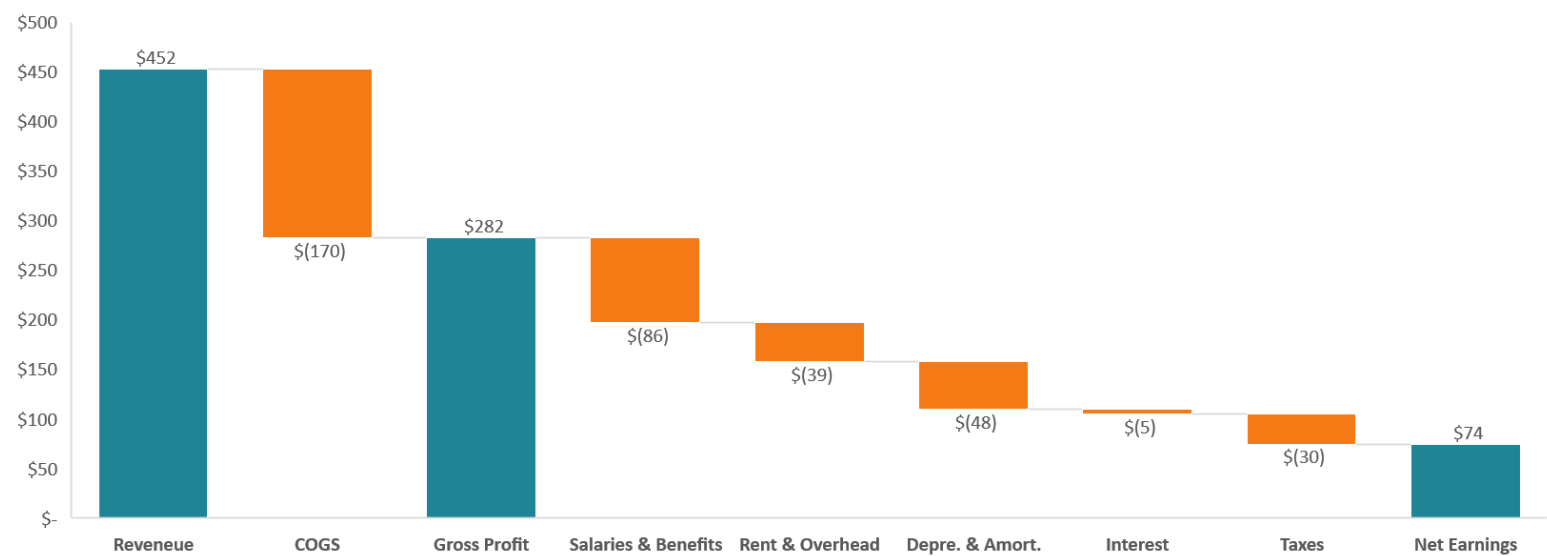
|                             |           |
|-----------------------------|-----------|
| Revenue                     | \$490,923 |
| COGS                        | \$243,130 |
| Expenses                    |           |
| Salaries and Benefits       | \$85,735  |
| Rent and Overhead           | \$39,236  |
| Depreciation & Amortization | \$48,241  |
| Interest                    | \$4,500   |
| Total Expenses              | \$177,712 |
| Net Operating Profit        | \$70,081  |

## Balance Sheet Summary 2018

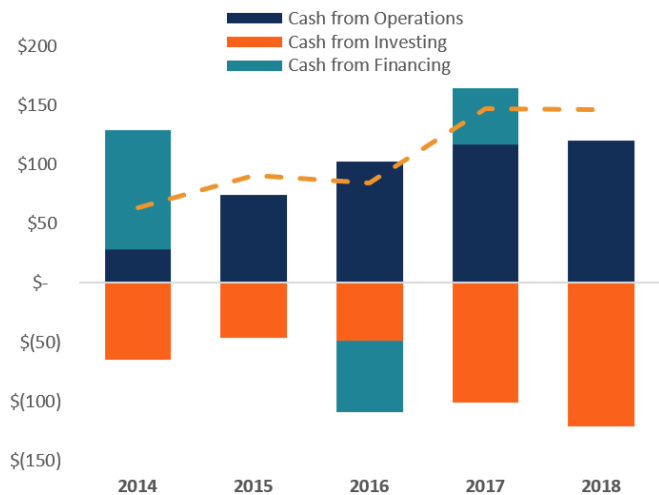
|  |           |
|--|-----------|
| Assets                                   |           |
| Current Assets                           | \$395,685 |
| Non-current Assets                       | \$589,610 |
| Total Assets                             | \$985,295 |
| Liabilities                              |           |
| Current Liabilities                      | \$135,374 |
| Long-term Liabilities                    | \$384,962 |
| Shareholders' Equity                     | \$464,959 |
| Total Liabilities & Shareholders' Equity | \$985,295 |

DASHBOARD TEMPLATE

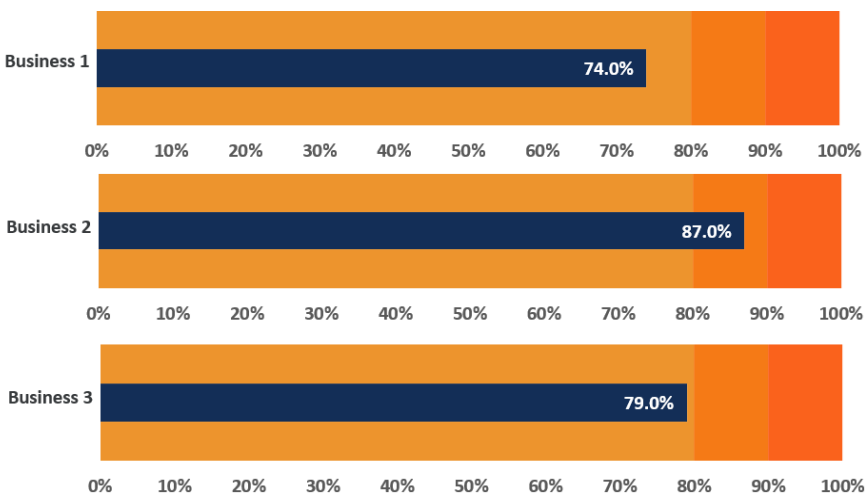
2018 Net Earnings Waterfall (\$000s)



Cash Flow and Cash Balance (\$000s)



2018 Productivity Rate



# Table of Contents

---



Introduction



Context



Visuals



Focusing  
Attention



Design  
Principles



3 Dashboards



Conclusion



# CFI Instructors

---



We stand out from the competition because our teachers are professional educators.



**Tim Vipond**

CEO & Instructor  
Vancouver



**Lisa Dorian**

Director & Instructor  
New York



**Justin Sanders**

Instructor  
London



**Ryan Spendelow**

Instructor  
Hong Kong



**Scott Powell**

Director & Instructor  
Vancouver



# Objectives



# Session objectives



Harness the power of visual communication



Understand your audience and the context



Design clear and effective, charts, graphs & images



Focus your audience's attention on the most important points



Apply best practices for design principles



Tell the story you want to tell



Build persuasive presentations



Design insightful dashboards



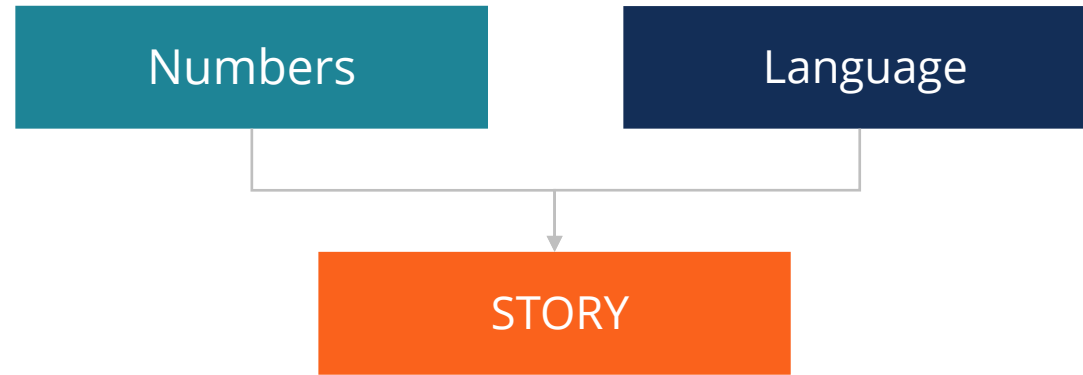
Become a world class financial analyst





# Data Visualization Overview

# What is storytelling with data?



Numbers and language combine to create storytelling with data

We typically work on numbers and language separately

This course teaches you to combine the two for effective business communication



# Why focus on visuals?



Majority of the population are “visual learners”



Our brains see words as pictures, not individual letters



Very hard to read financial analysis in numbers and tables



Charts bring the data to life



# The potential impact is huge



## Executive Decision Making



Executives need to make decisions quickly



Good analysts distill large amounts of complex information into a simple, concise output

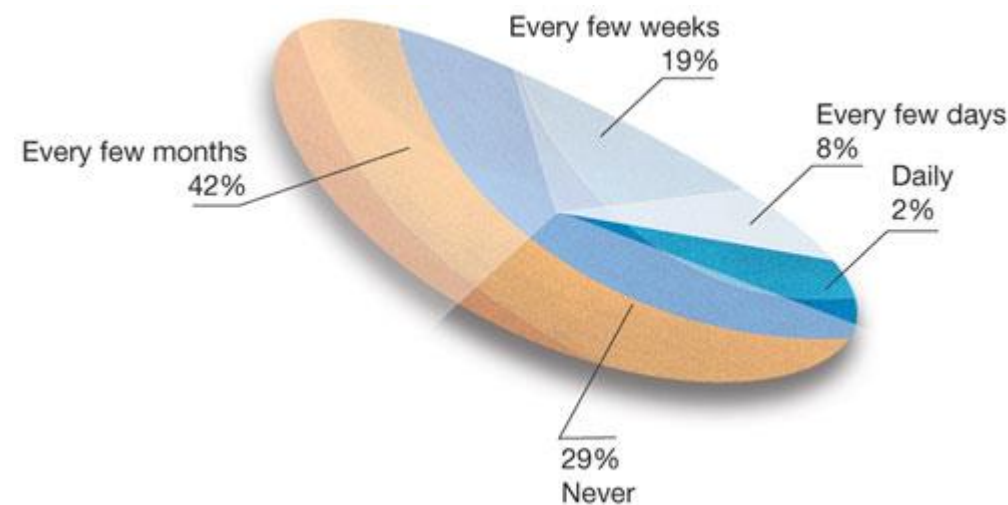
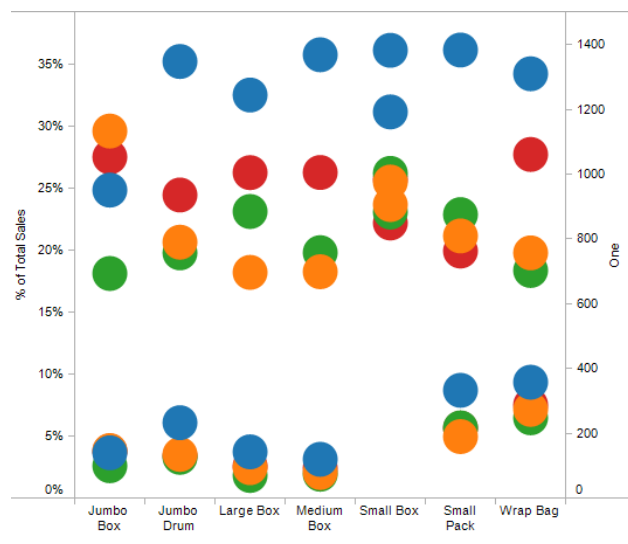
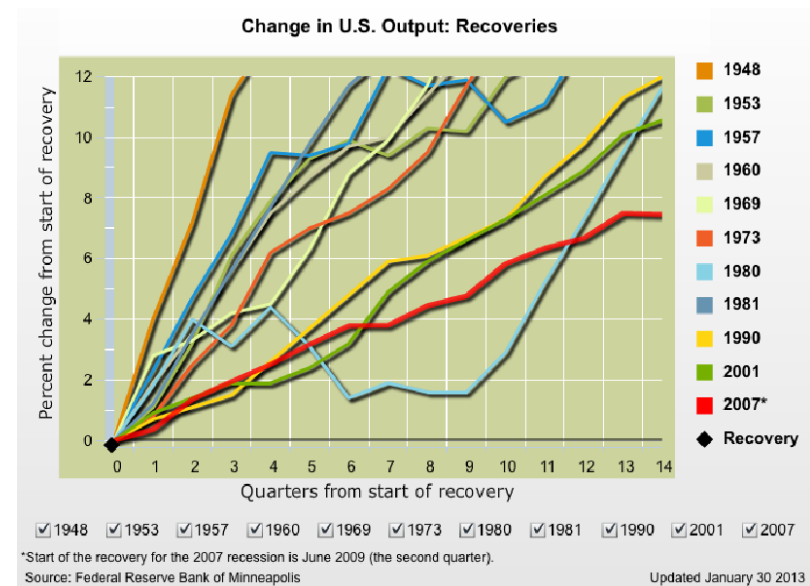
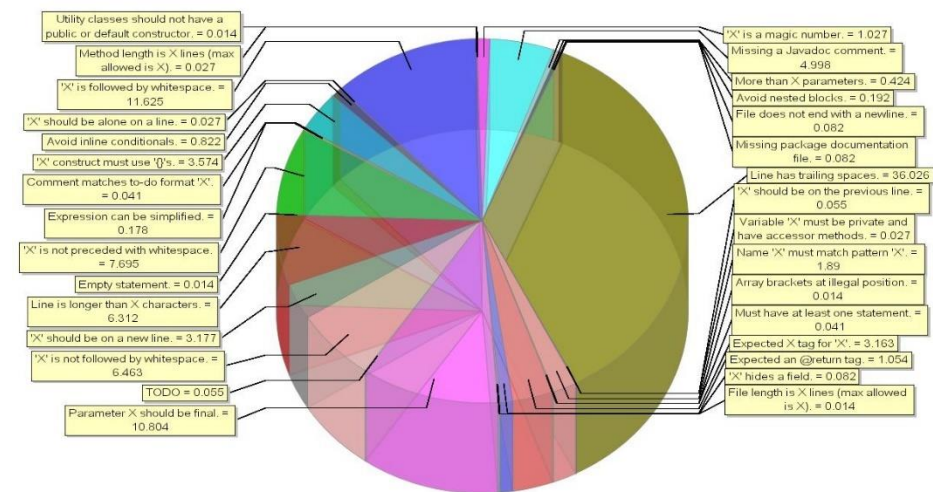


Enhanced decision making can lead to significant value creation at most companies





# Bad charts are everywhere



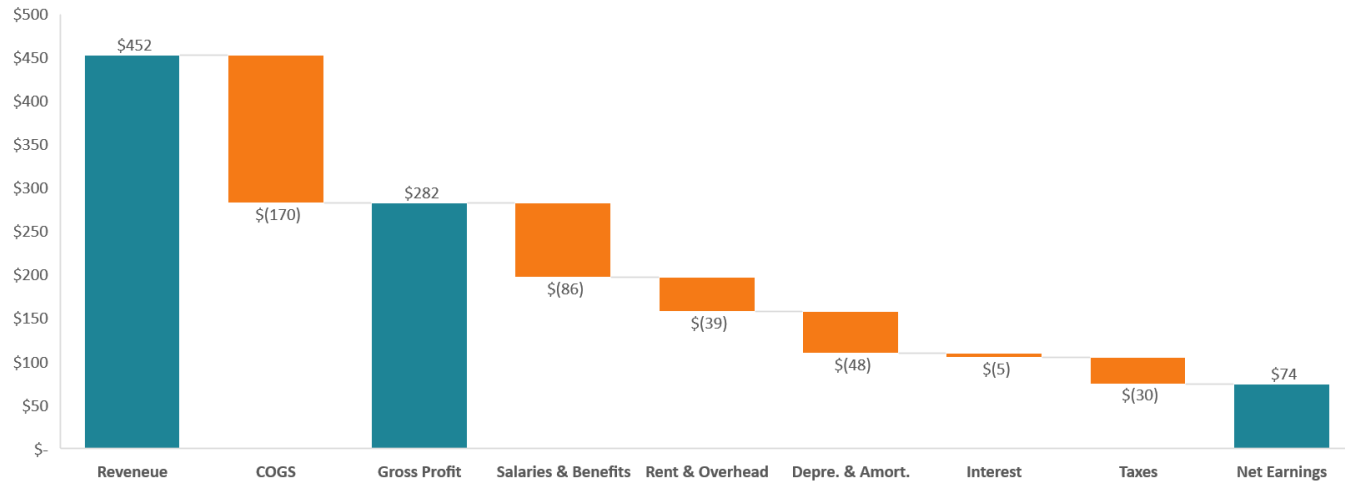
# Great visuals make such a difference

© Corporate Finance Institute

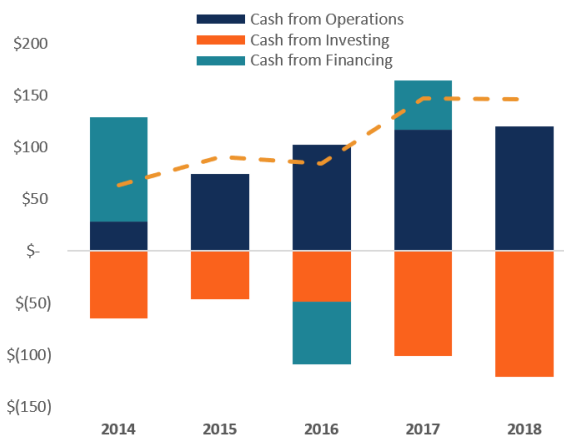
## DASHBOARD TEMPLATE



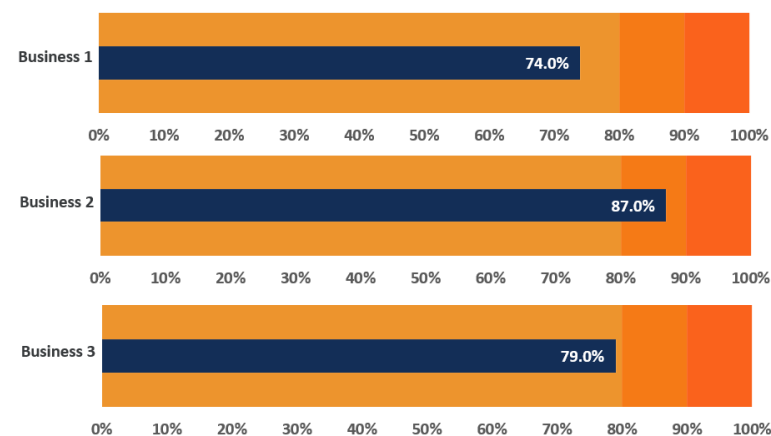
2018 Net Earnings Waterfall (\$000s)



Cash Flow and Cash Balance (\$000s)

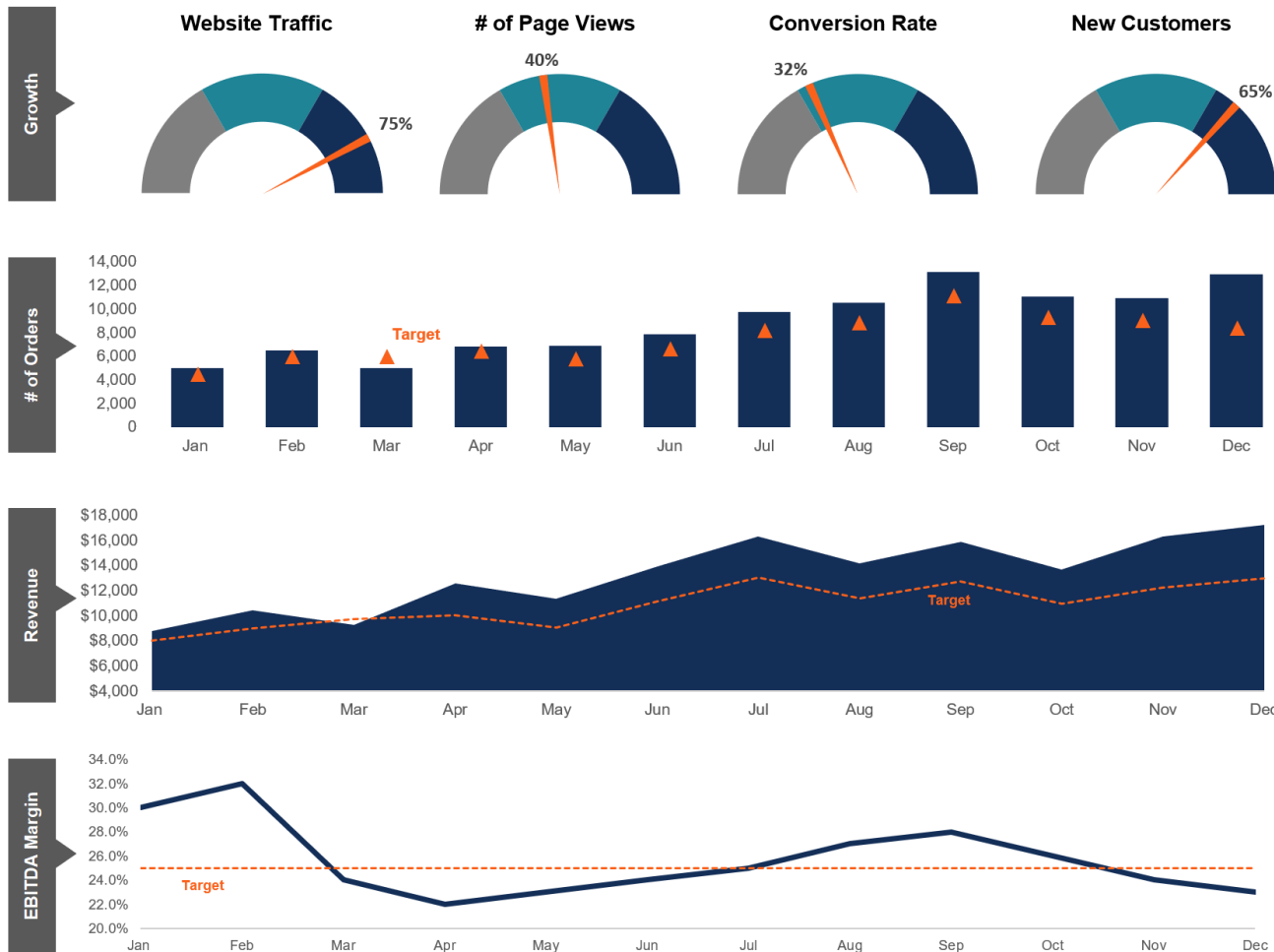


2018 Productivity Rate



# Great visuals make such a difference

## DASHBOARD TEMPLATE





# Context



# Session objectives



Know who your audience is



Determine what action you want them to take



Decide how to get them to take that action



Know what questions to ask



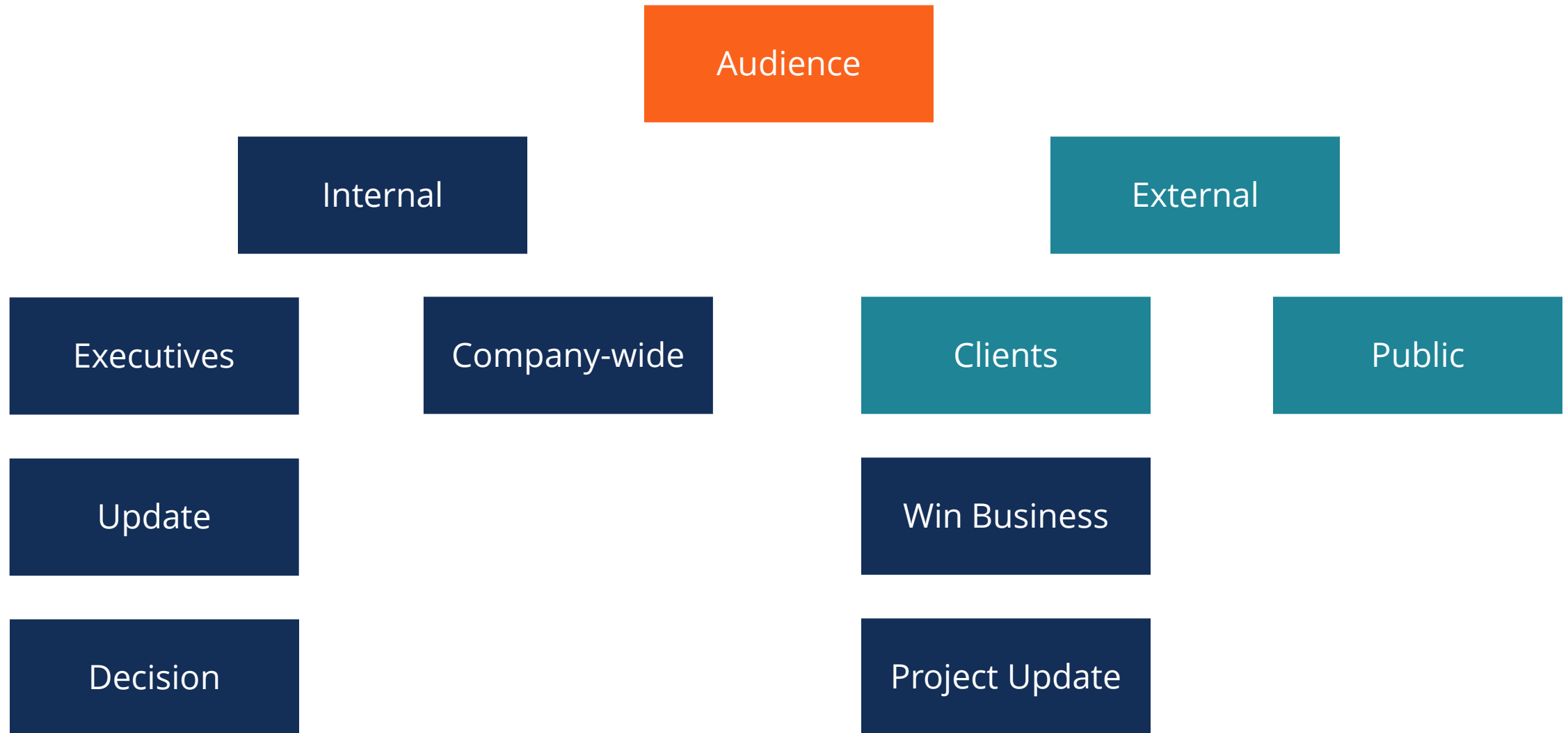
Identify the “big idea”



Create a high level storyboard

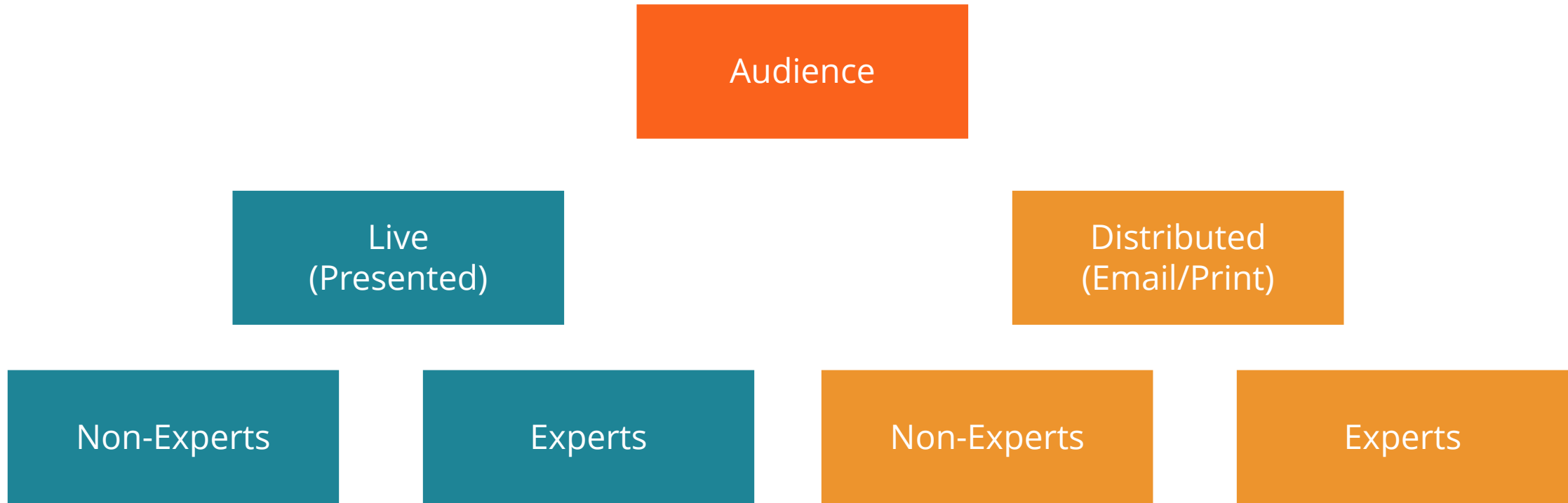
# Know your audience

---

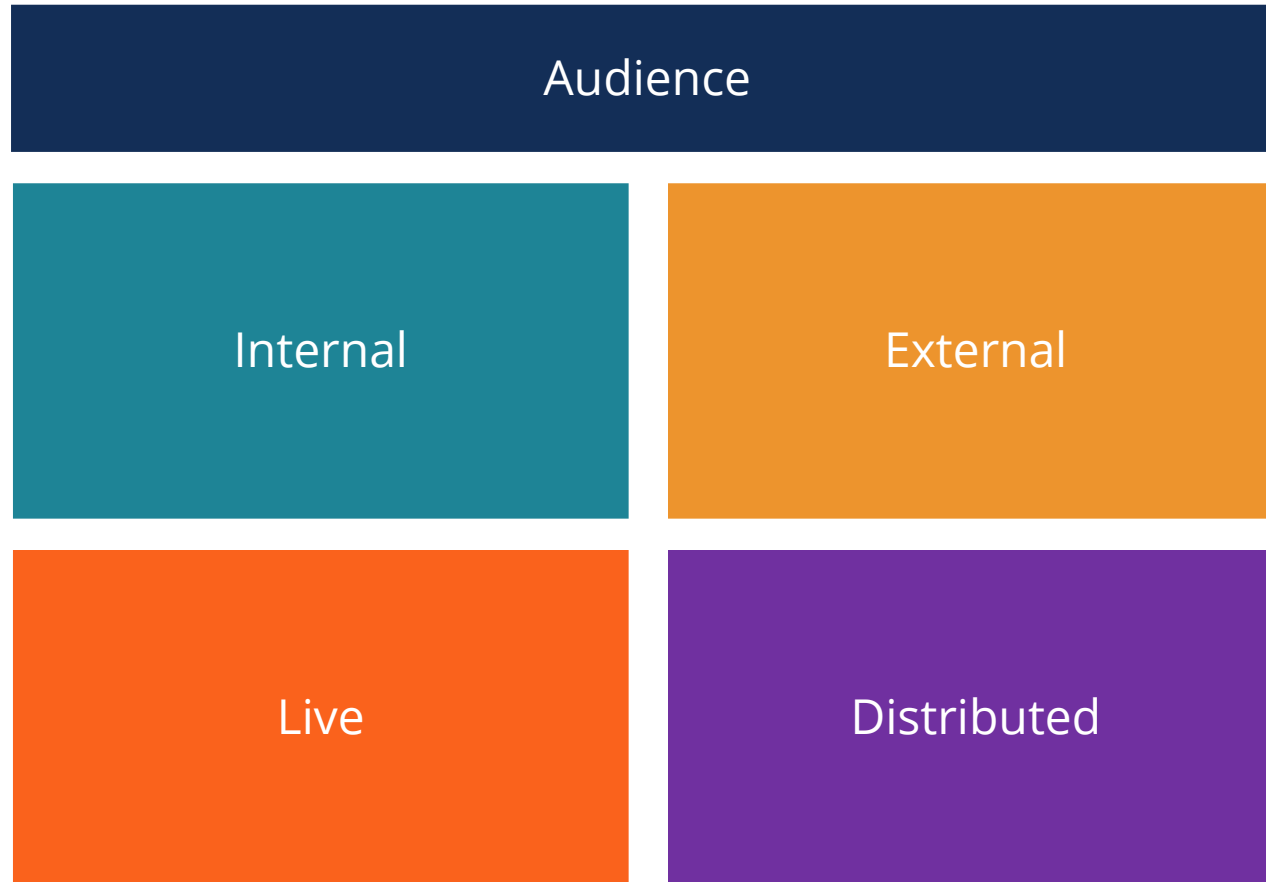


# Know your audience

---



# Know your audience





# Tailor your message



## Considerations

Level of detail

Use of jargon /  
technical  
information /  
Acronyms

Tone

Inform, or  
persuade?

What biases does  
the audience have?

Quantitative vs  
qualitative data



# The main idea

---



“

“Despite significant growth in our company’s top line and improving EBITDA margins, we require a significant capital investment next year or we will run out of money.”

# Storyboarding



## ISSUE:

Despite growth and better margins, we need to raise money



## DEMONSTRATE ISSUE:

Positives: Graphs of revenue, margins,



## DEMONSTRATE ISSUE:

Negatives: customer metrics, capital investment, cash burn, etc.



## IDEAS:

Raise equity, raise debt, dramatically cut capital spending



## COMPARISON:

Show various outcomes, before and after etc.



## RECOMMENDATION:

The optional choice is to raise \$x of equity



## Visuals



# Session objectives



Review the various visual options



Match visuals to the situation



Know when to use what type of visual

# Text

---

**+75%**



# Table

| Exit Multiple | Revenue Growth |       |       |       |       |       |
|---------------|----------------|-------|-------|-------|-------|-------|
|               |                | 0%    | 5.0%  | 10.0% | 15.0% | 20.0% |
|               | -              | 19.22 | 23.73 | 29.09 | 35.43 | 42.88 |
|               | 7.0x           | 20.85 | 25.92 | 31.97 | 39.13 | 47.56 |
|               | 8.0x           | 22.47 | 28.11 | 34.85 | 42.83 | 52.24 |
|               | 9.0x           | 24.10 | 30.31 | 37.72 | 46.53 | 56.92 |
|               | 10.0x          | 25.73 | 32.50 | 40.60 | 50.23 | 61.60 |

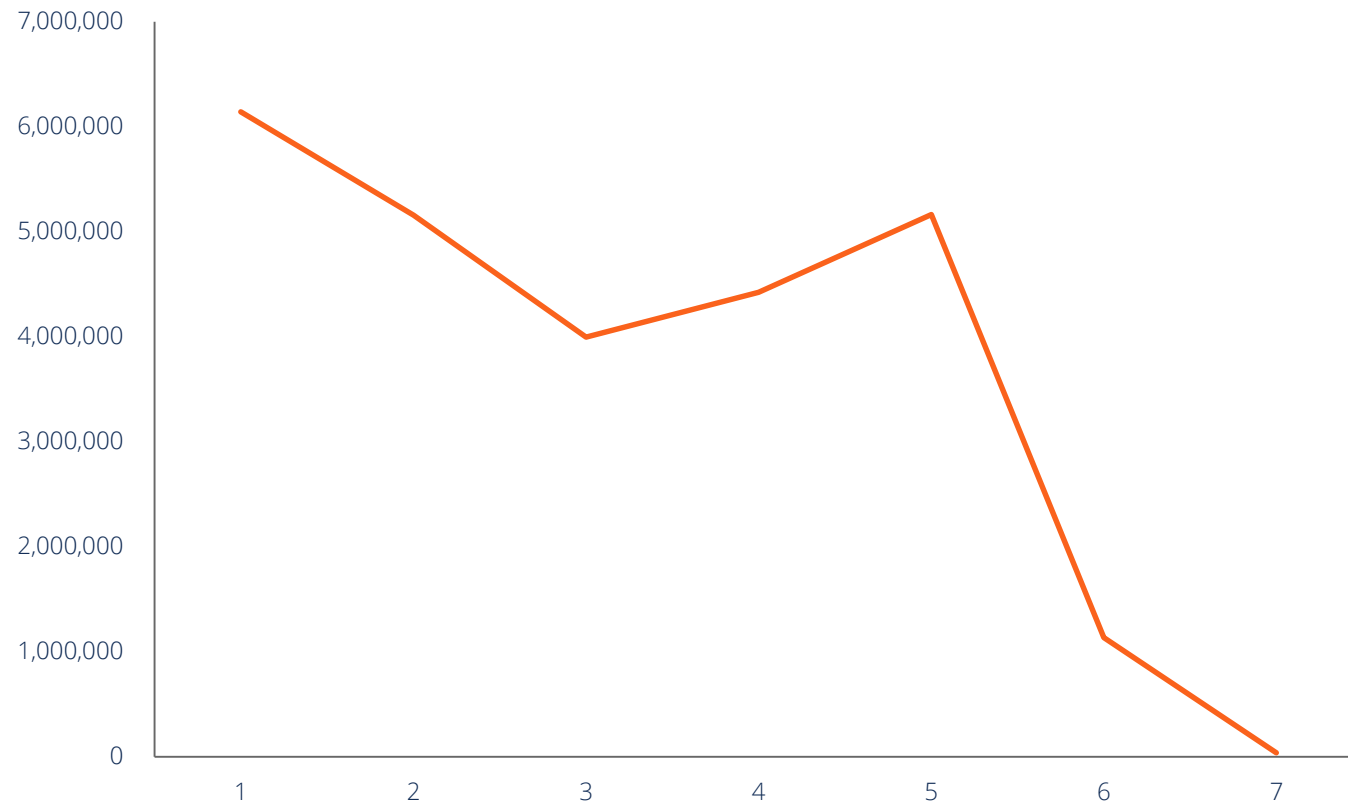


# Heatmap

| Exit Multiple | Revenue Growth |       |       |       |       |       |
|---------------|----------------|-------|-------|-------|-------|-------|
|               |                | 0%    | 5.0%  | 10.0% | 15.0% | 20.0% |
|               | -              | 19.22 | 23.73 | 29.09 | 35.43 | 42.88 |
|               | 7.0x           | 20.85 | 25.92 | 31.97 | 39.13 | 47.56 |
|               | 8.0x           | 22.47 | 28.11 | 34.85 | 42.83 | 52.24 |
|               | 9.0x           | 24.10 | 30.31 | 37.72 | 46.53 | 56.92 |
|               | 10.0x          | 25.73 | 32.50 | 40.60 | 50.23 | 61.60 |

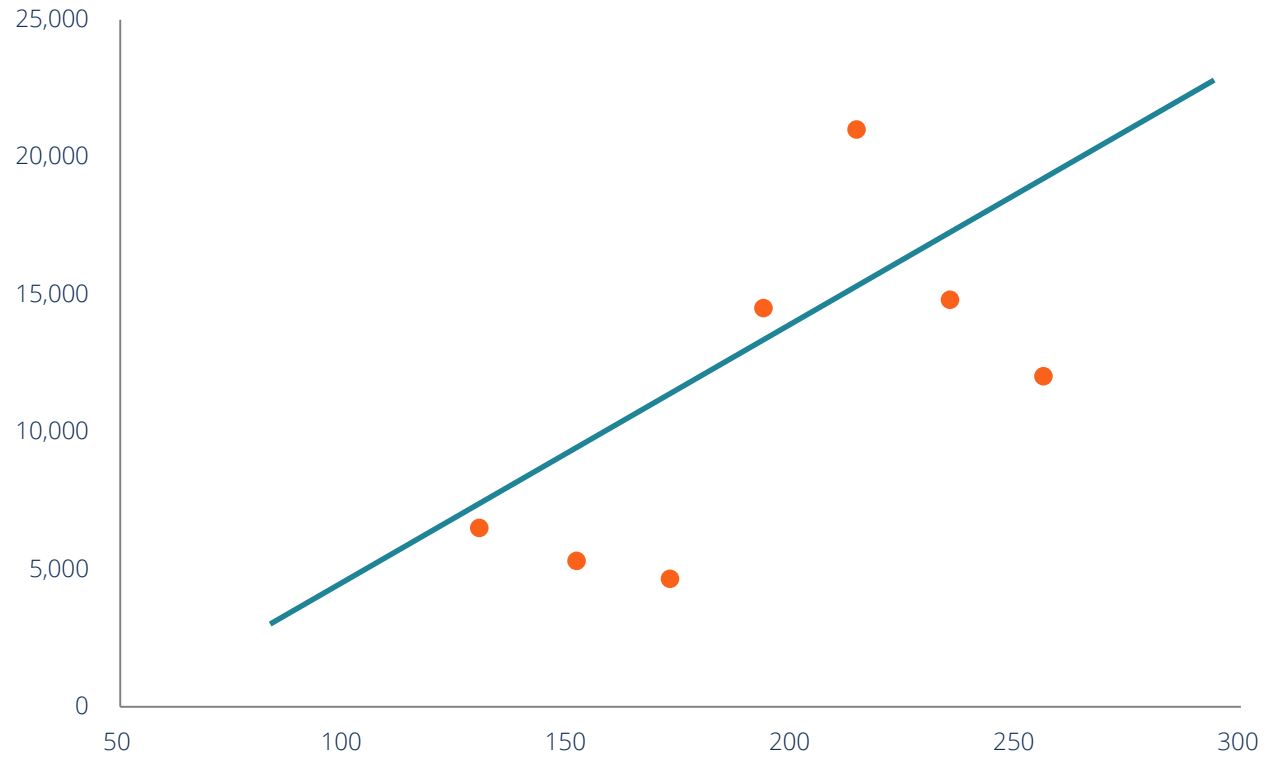


# Line chart

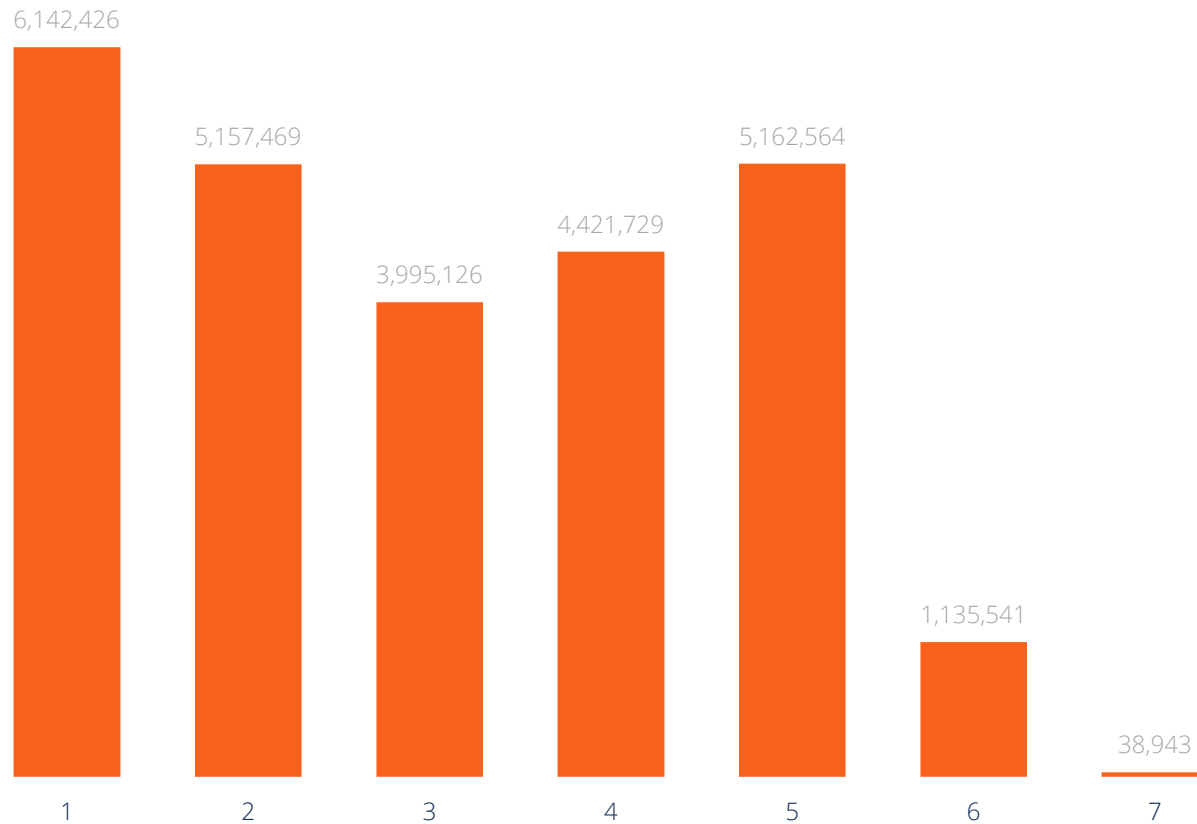




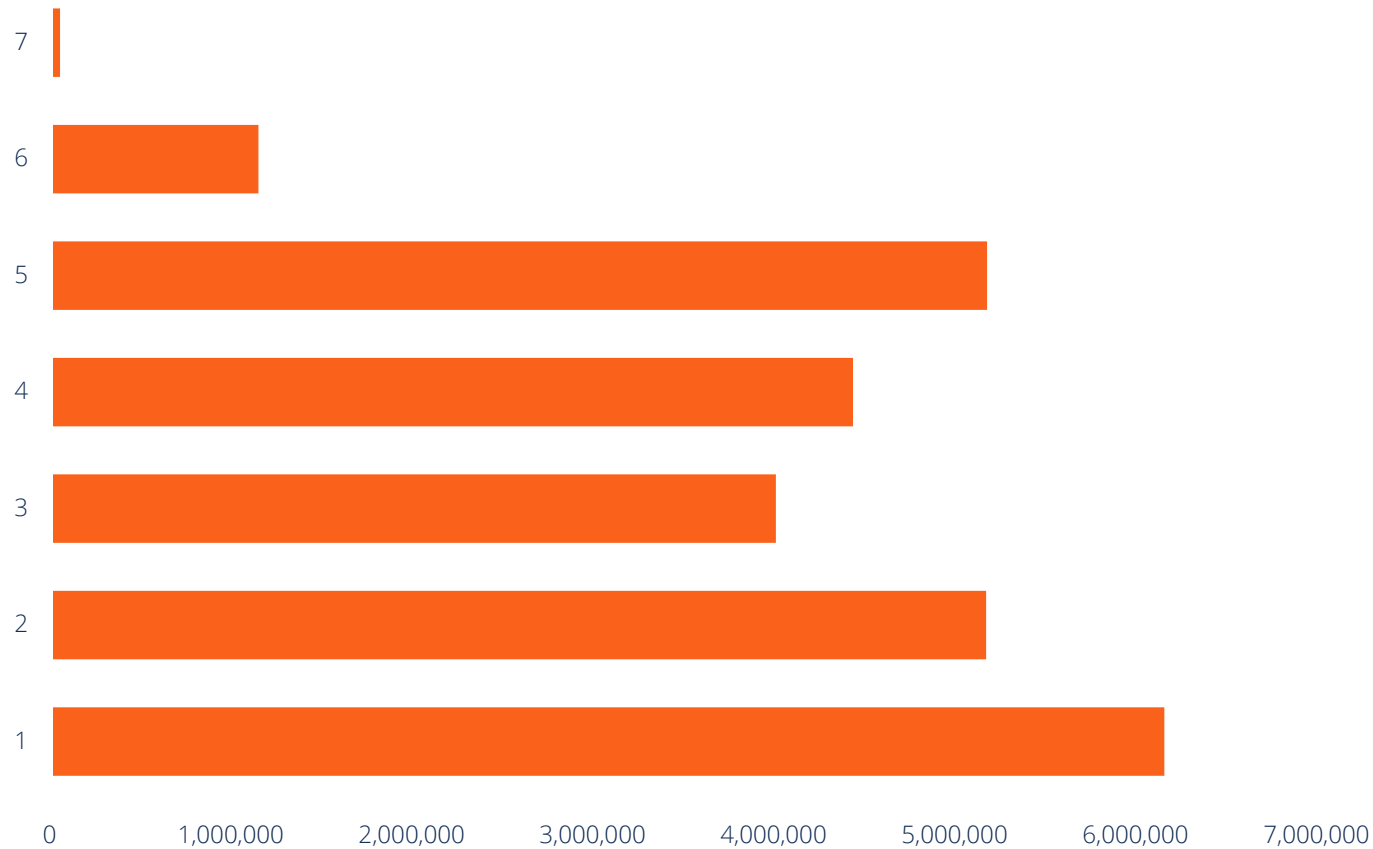
# Scatterplot



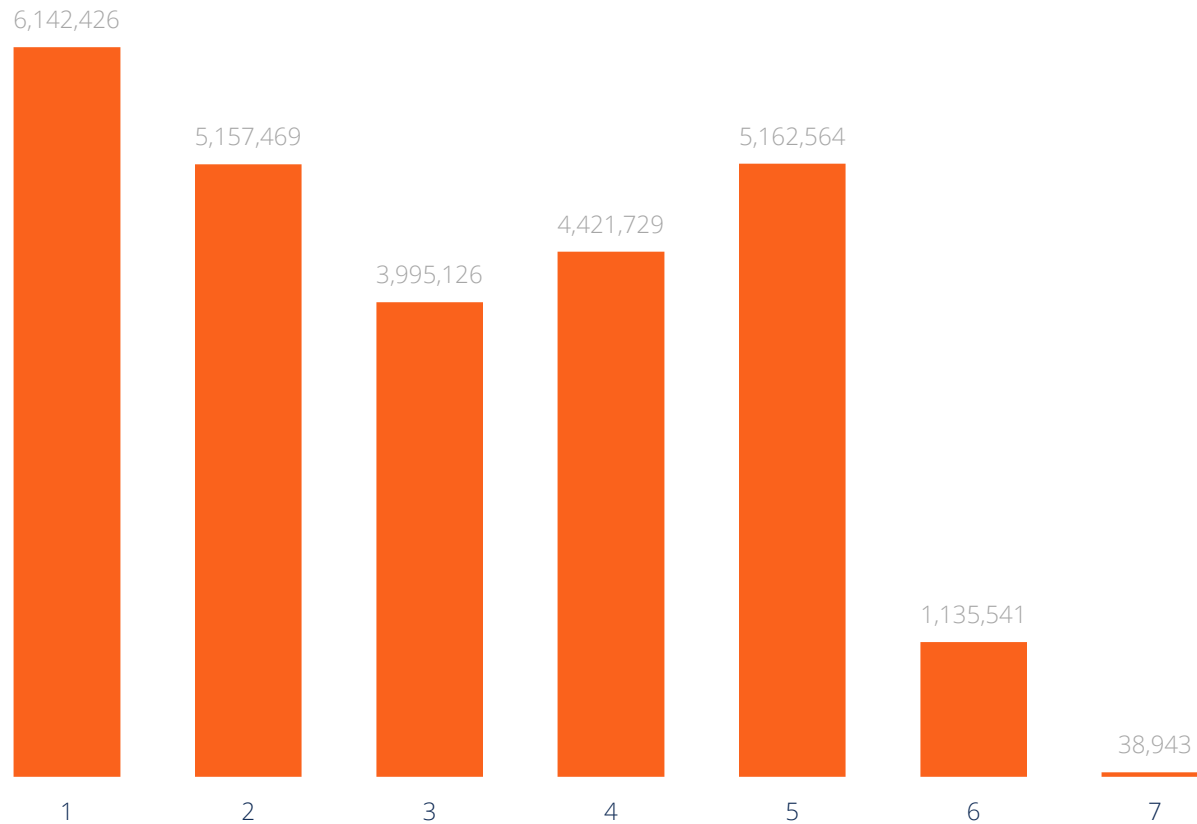
# Column



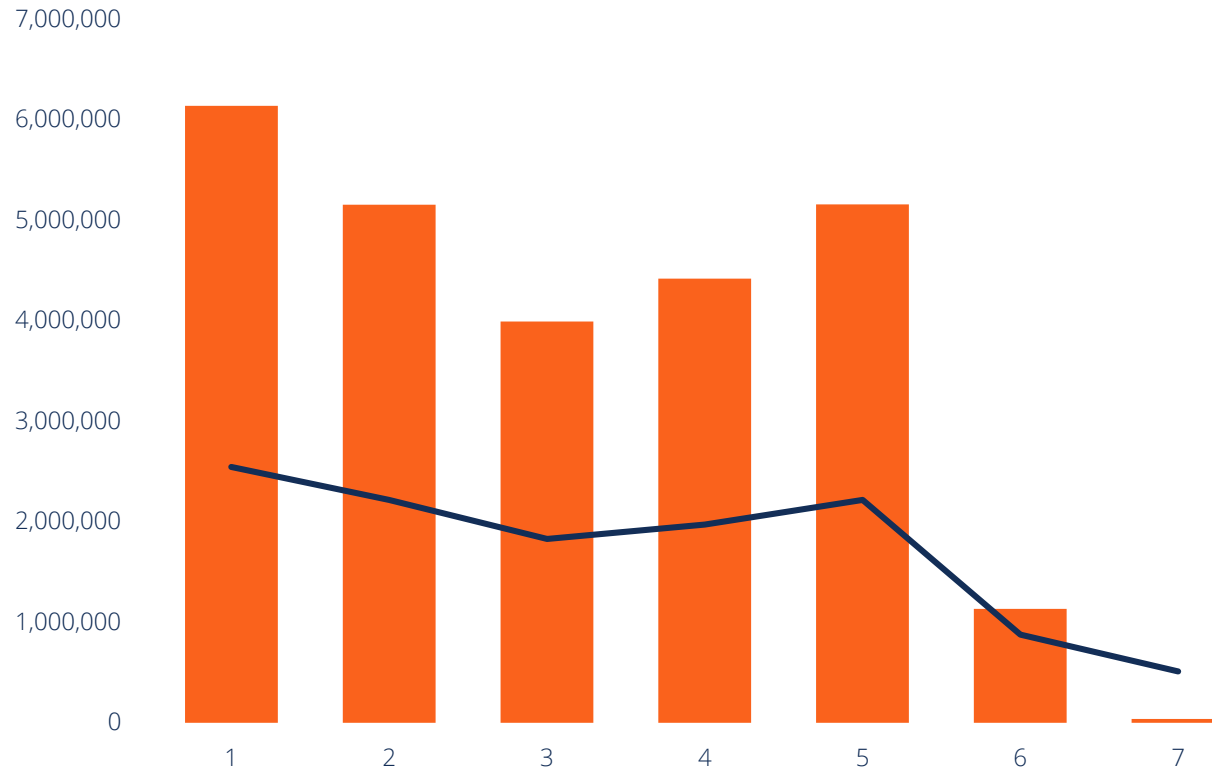
# Bar



# Column

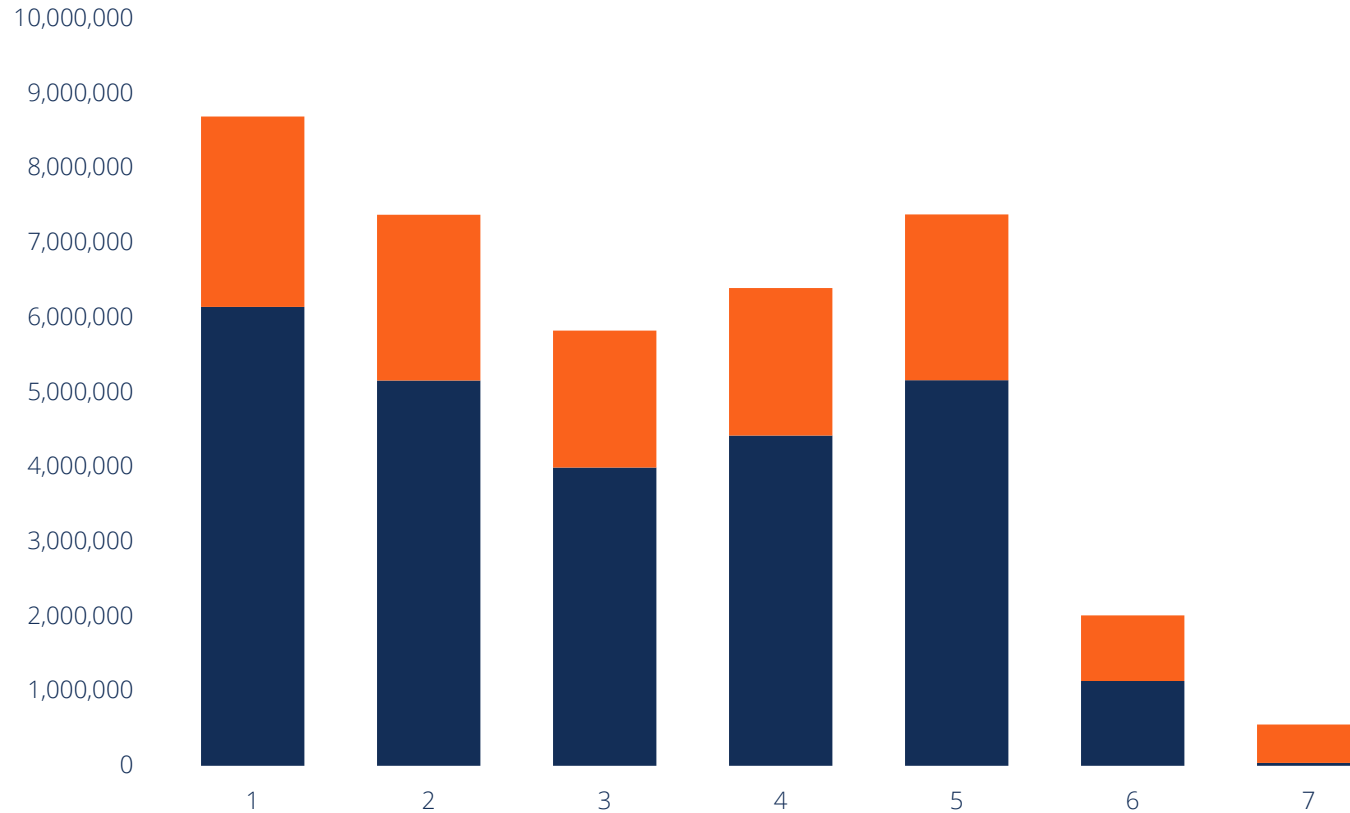


# Column and line

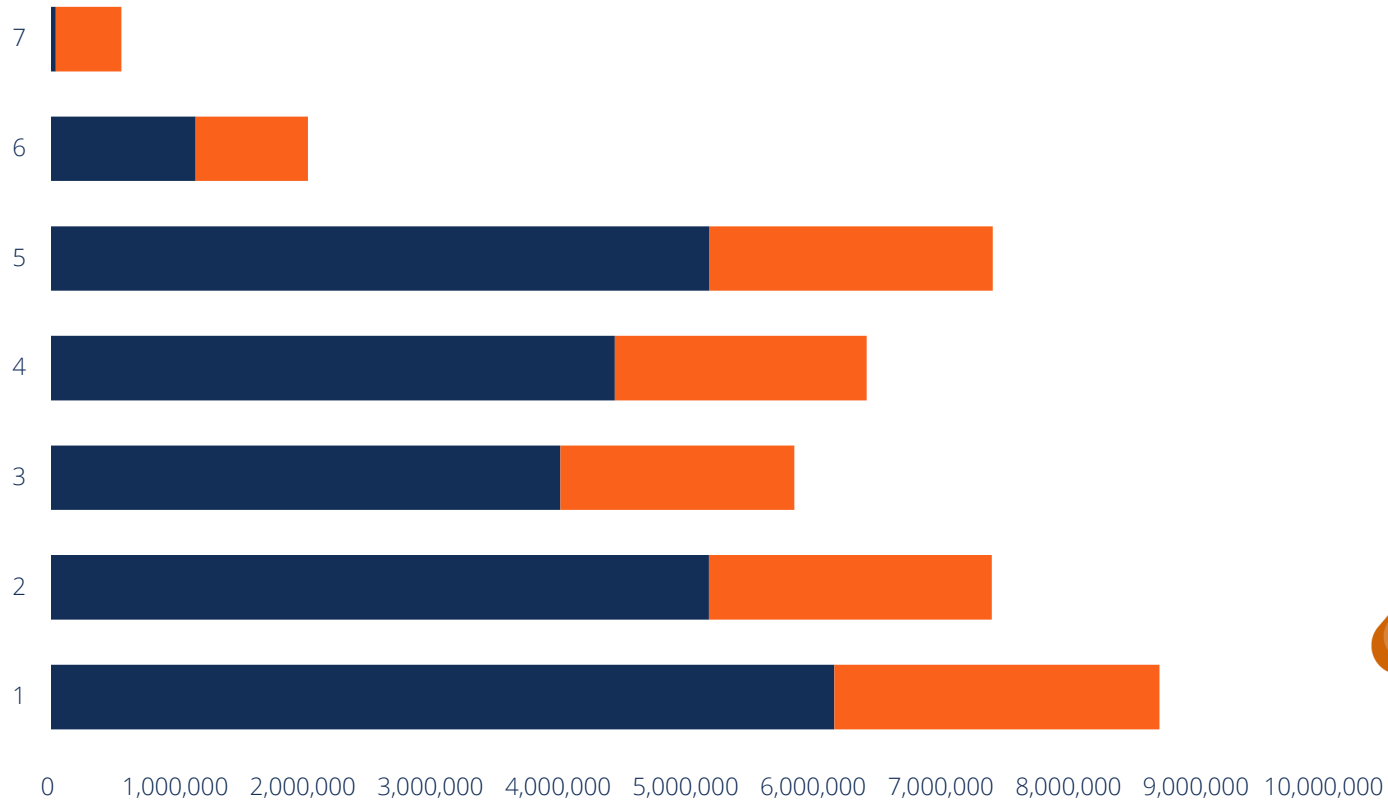




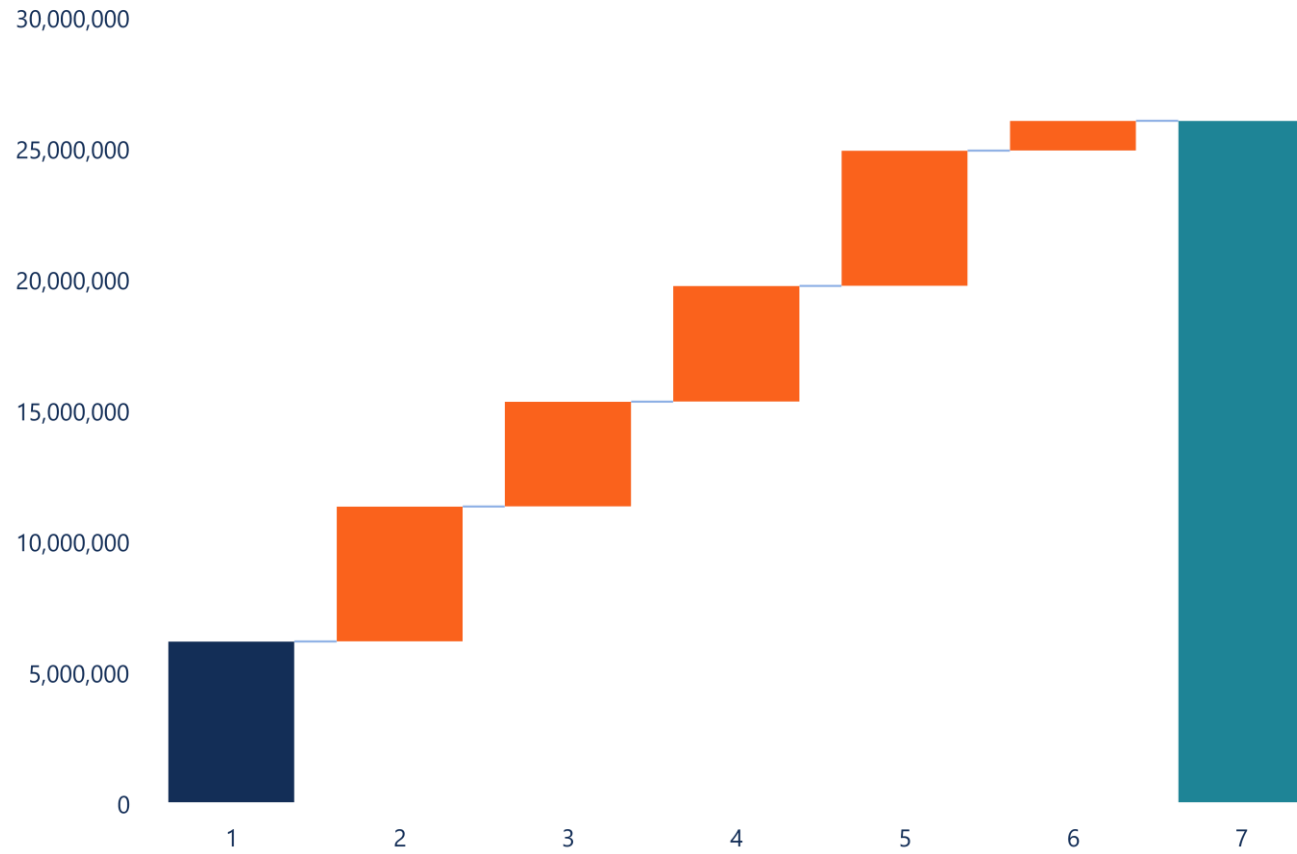
# Stacked column



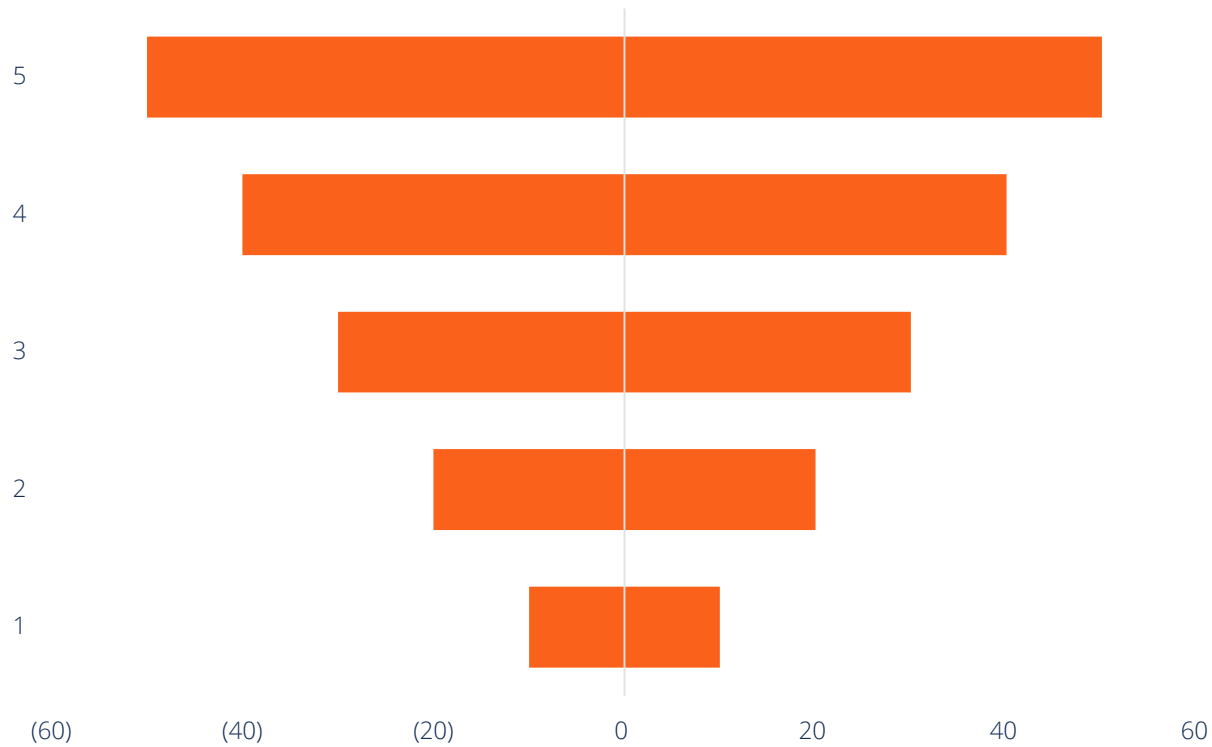
# Stacked bar



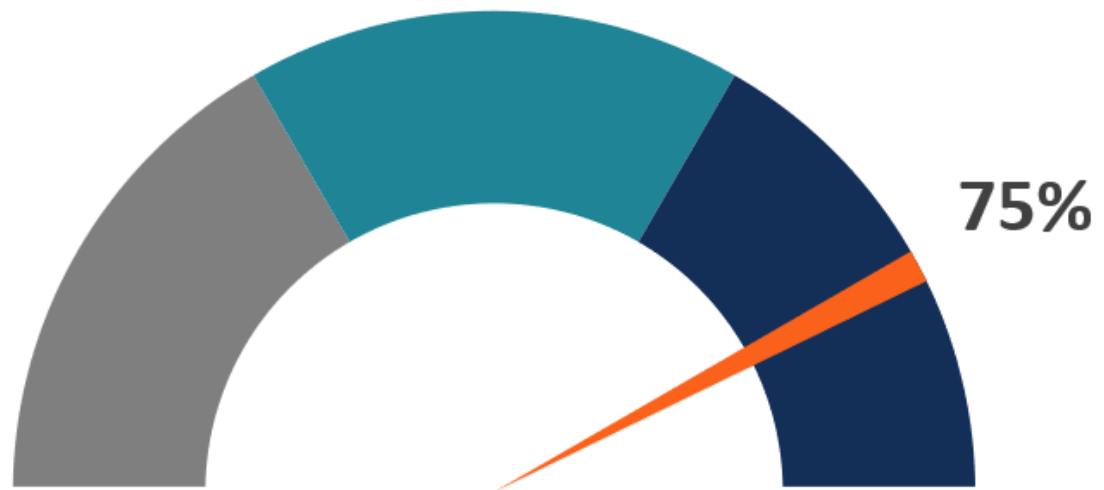
# Waterfall



# Tornado



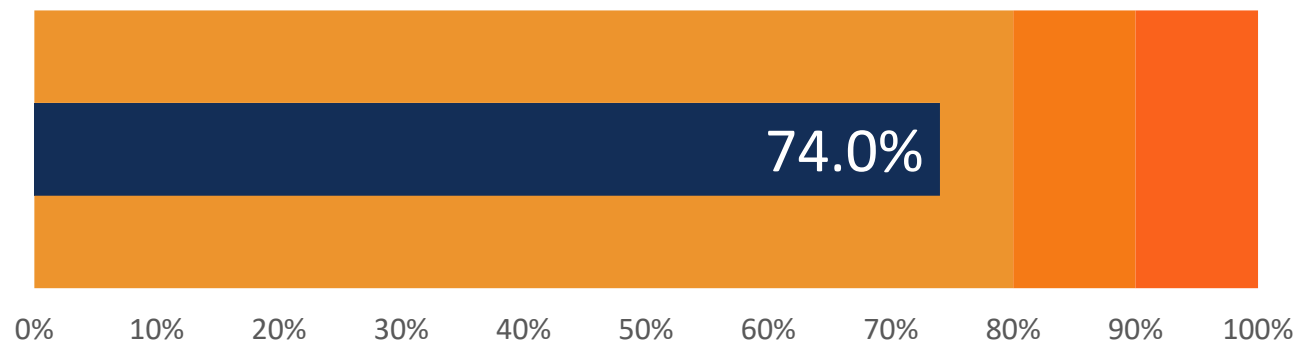
# Gauge





# Bullet

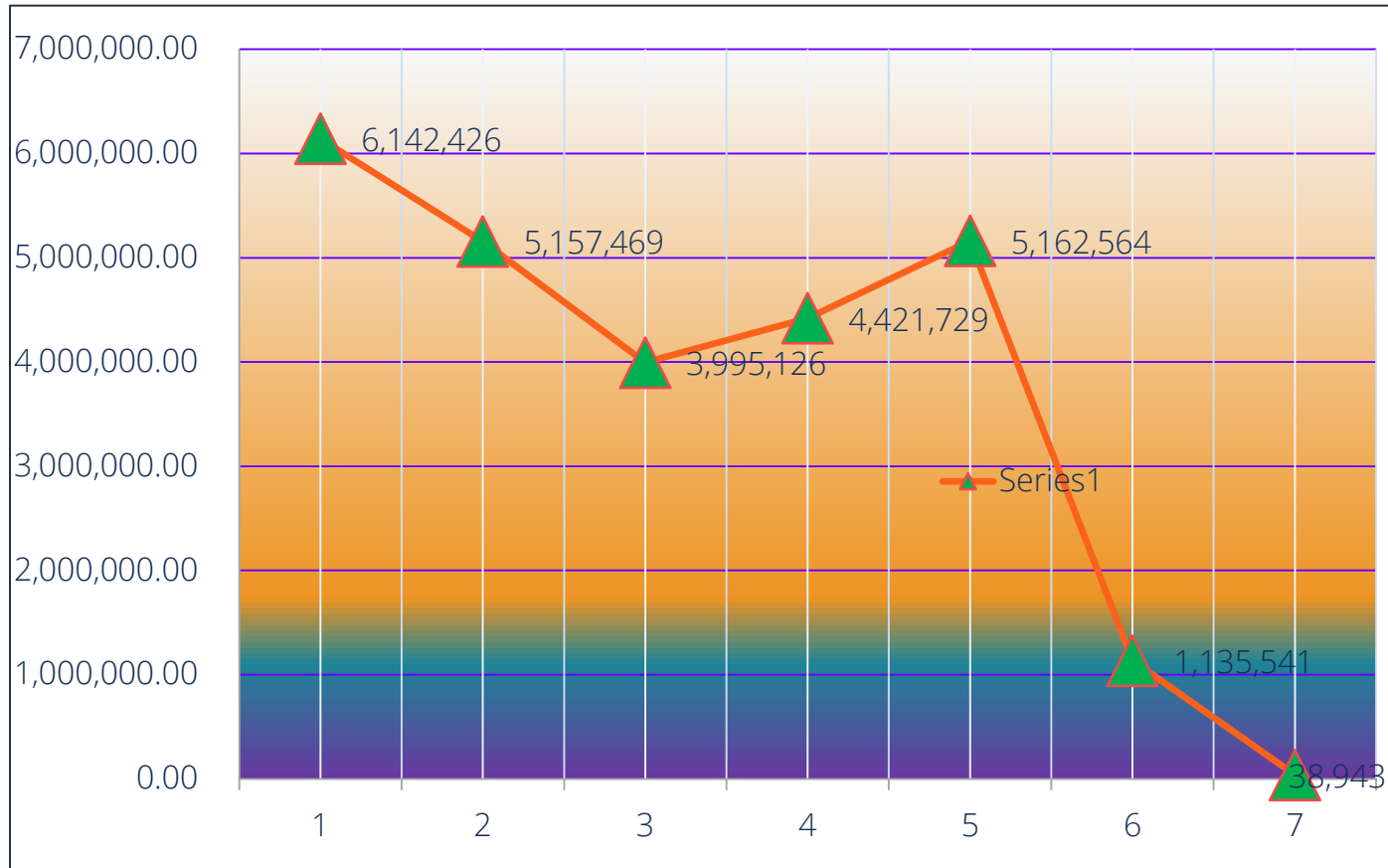
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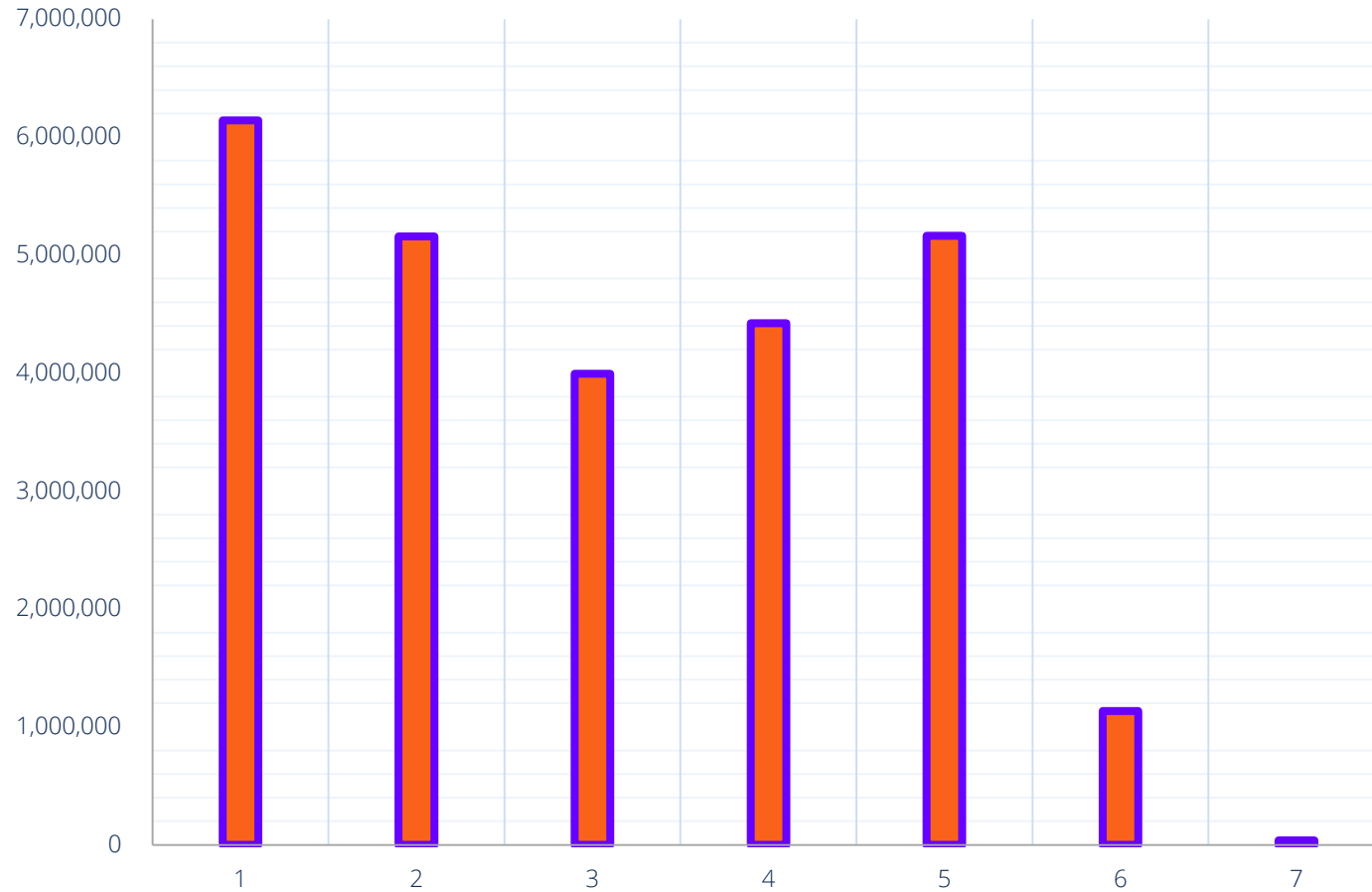
What not to do...

# What not to do...



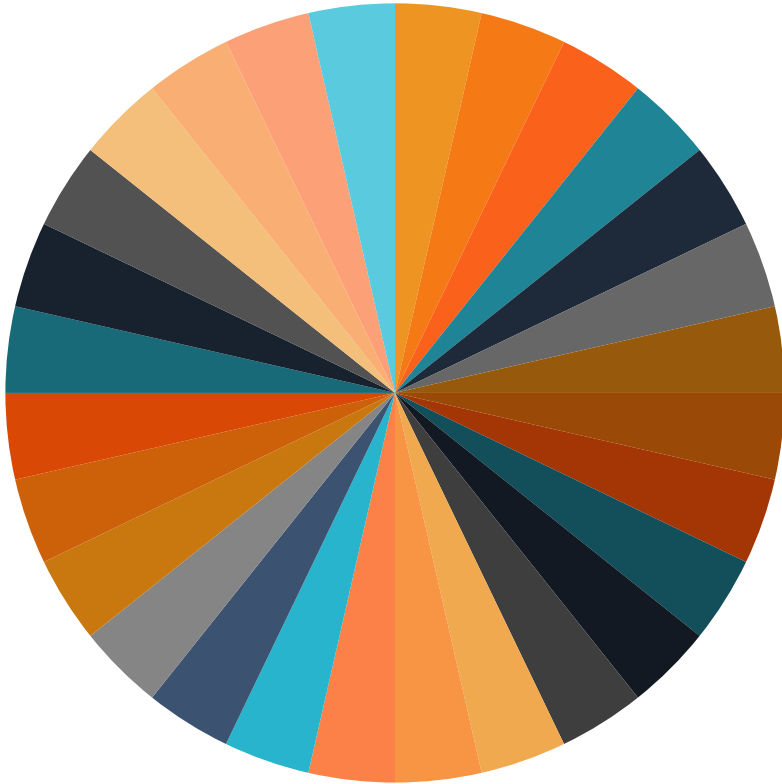
# What not to do...

---



# What not to do...

---

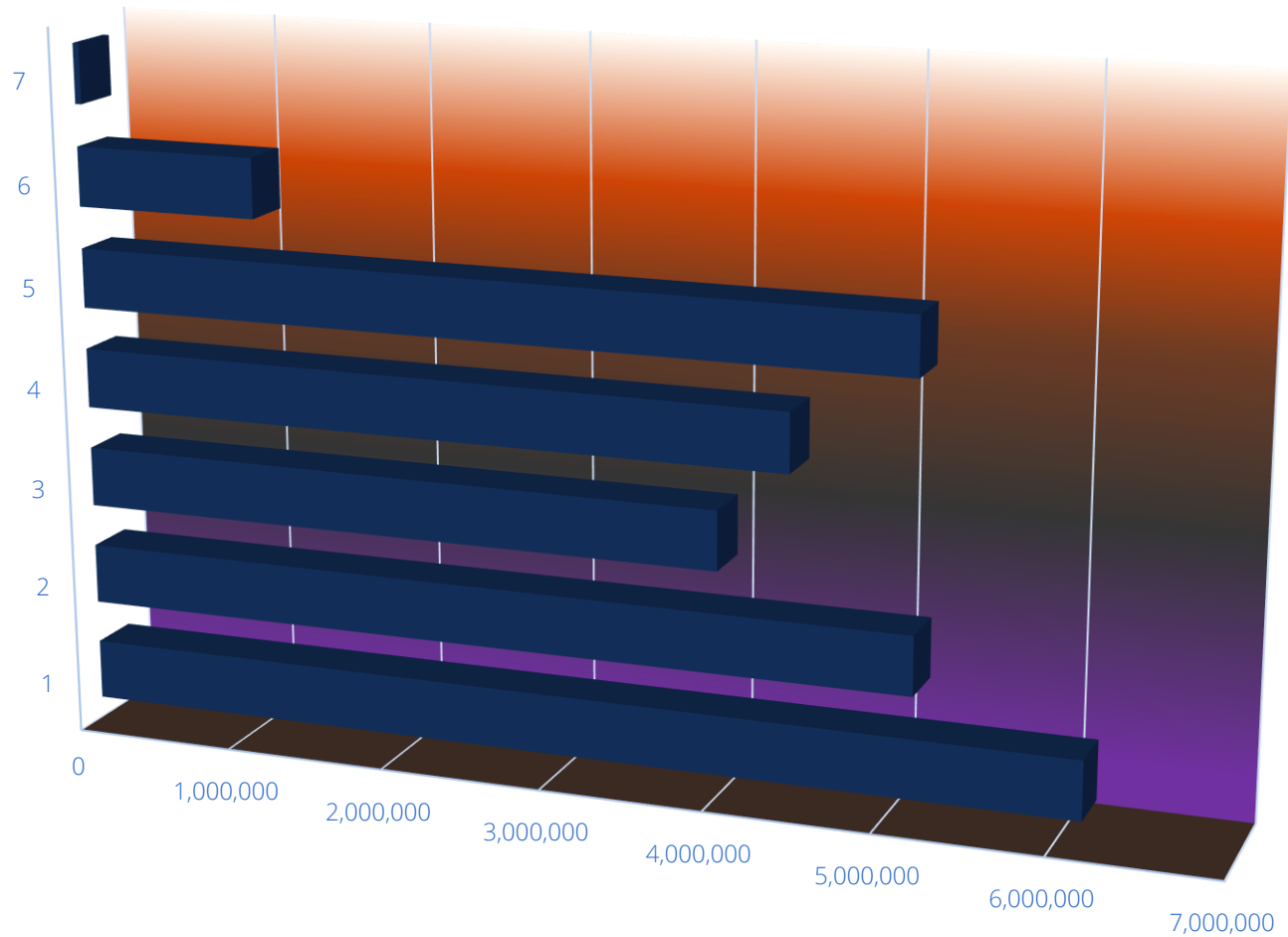


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28





# What not to do...

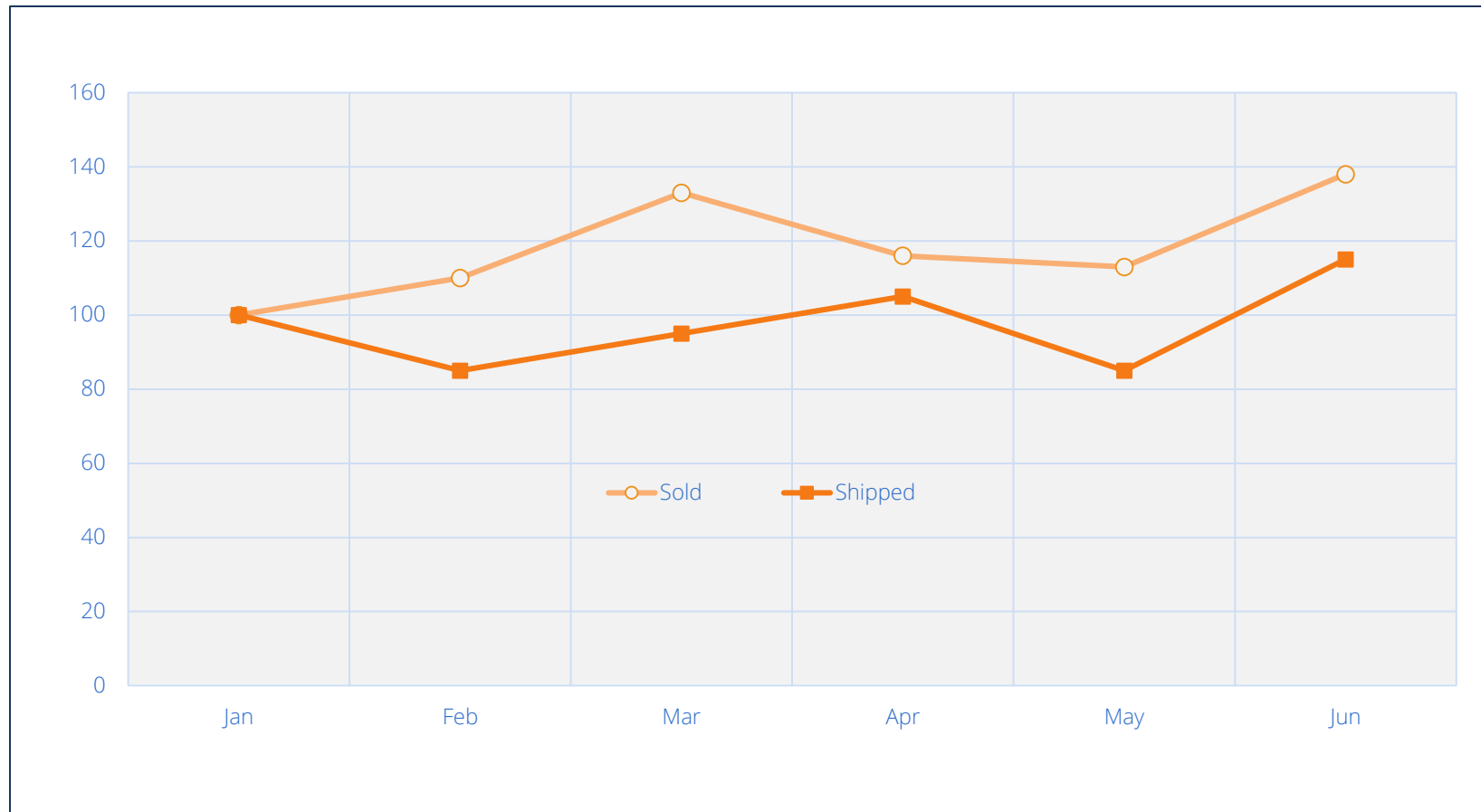




## Visual Exercise

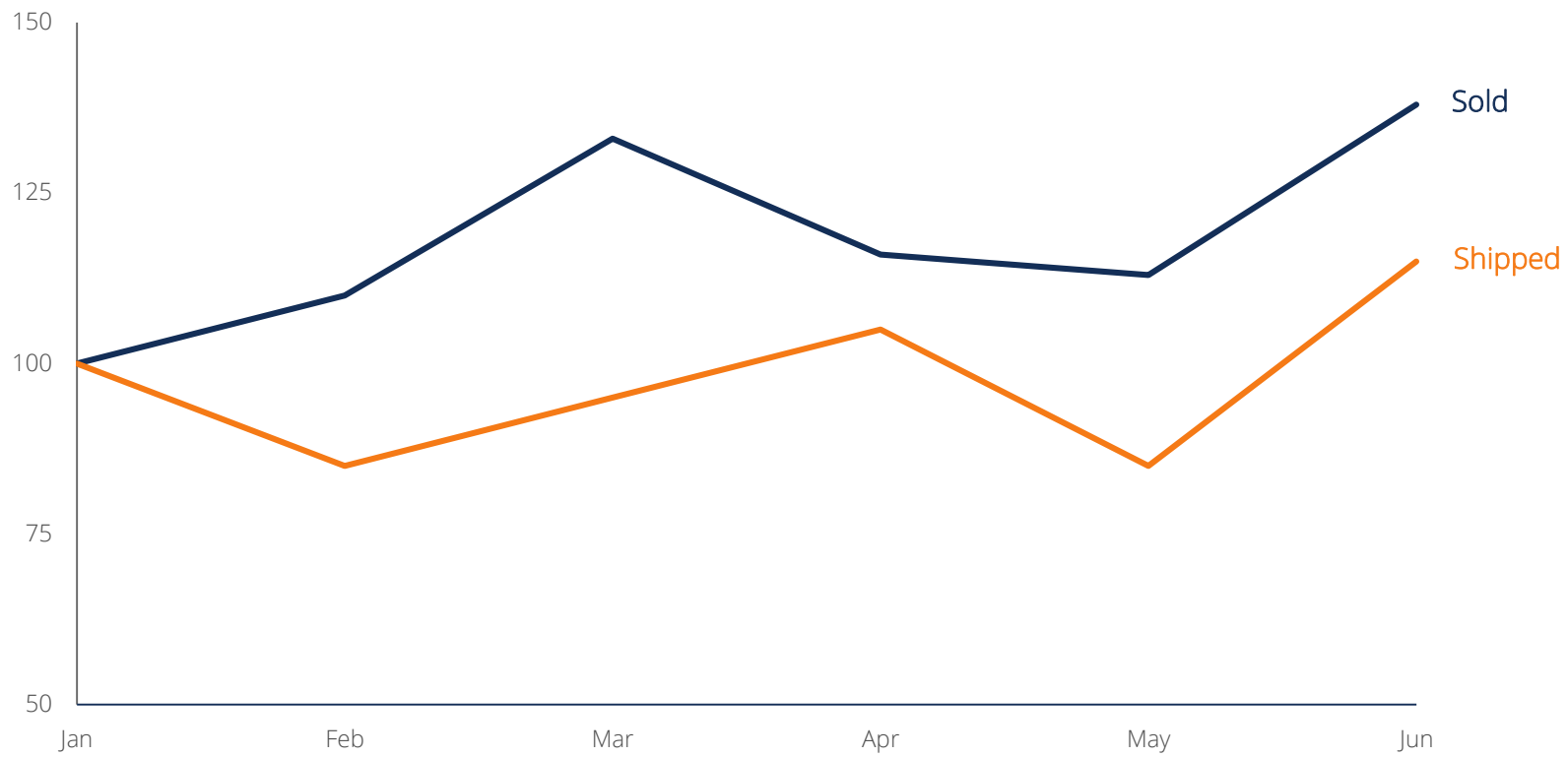
# In Excel, make at least 6 changes to improve this graph

Sold versus Shipped



# Solution

## Sold versus Shipped







# Focusing Attention

# Session objectives



Understand why pre-attentive attributes matter



Learn what each of the attributes are



Learn how to incorporate them in charts



# Pre-attentive attributes



A pre-attentive attribute is processed by the brain BEFORE it enters our consciousness or memory



It's a survival instinct to highlight changes in our environment



Consists of color, form, movement and positioning



Can be easily incorporated into charts



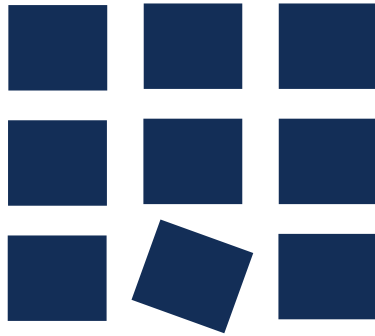
Dramatically improves the effectiveness by focusing attention where we want it





# Examples of pre-attentive attributes

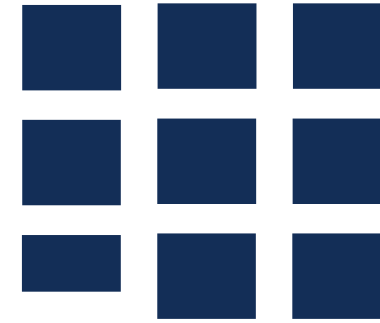
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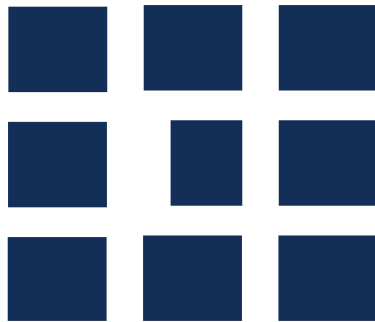
Orientation



Shape



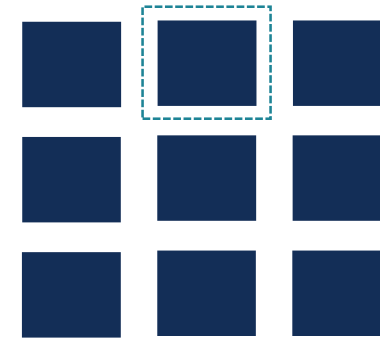
Length



Width

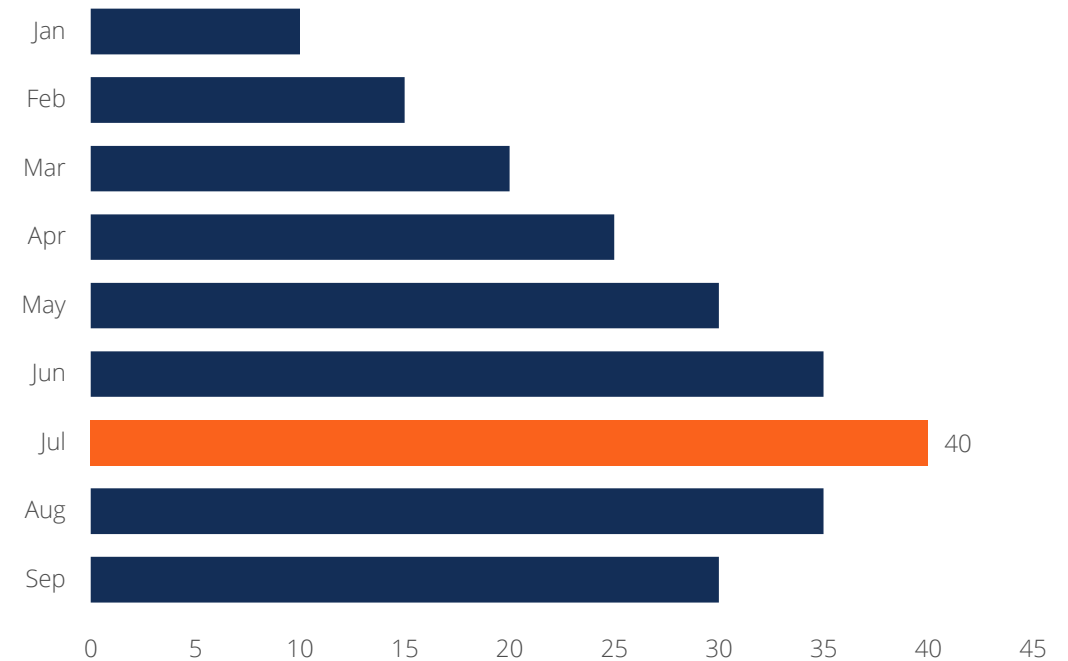
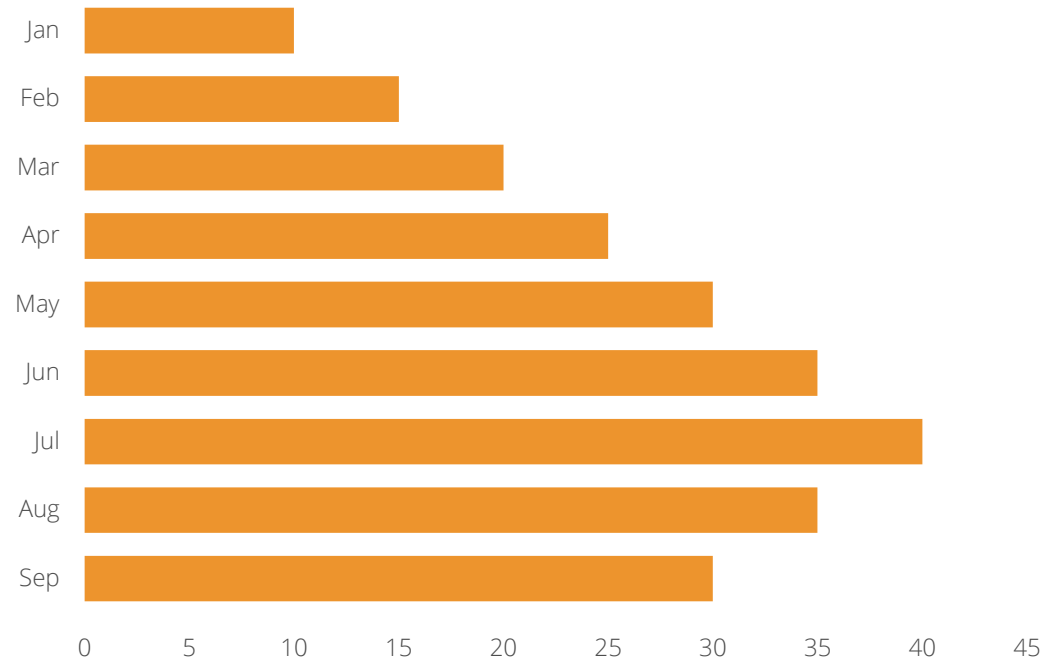


Color



Enclosure

# Incorporating the attributes with charts

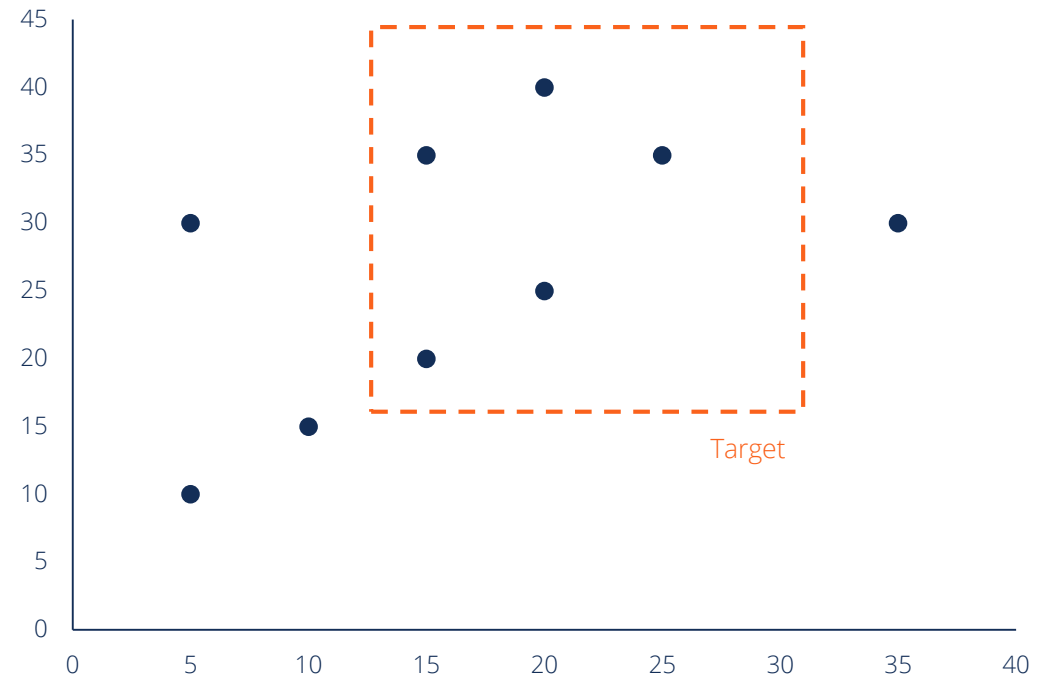
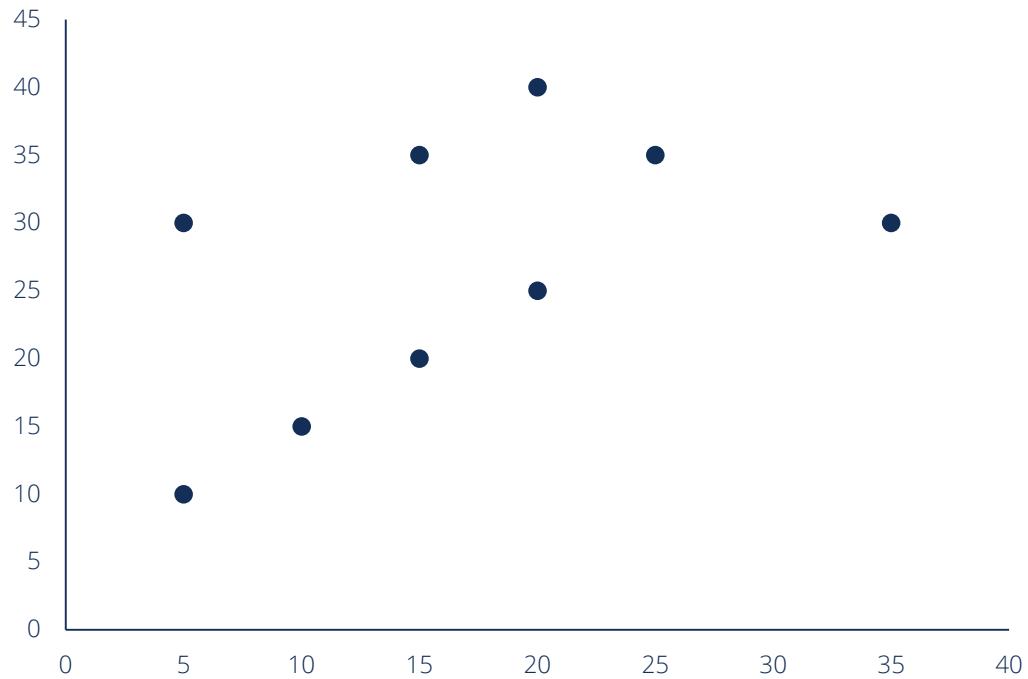


# Incorporating the attributes with charts

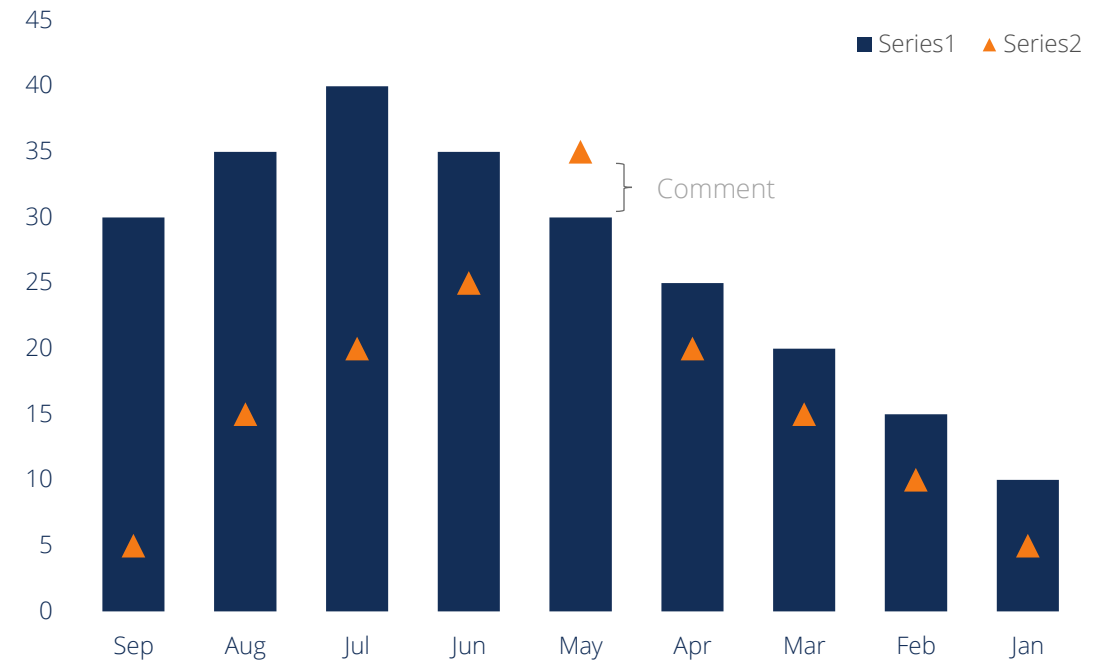
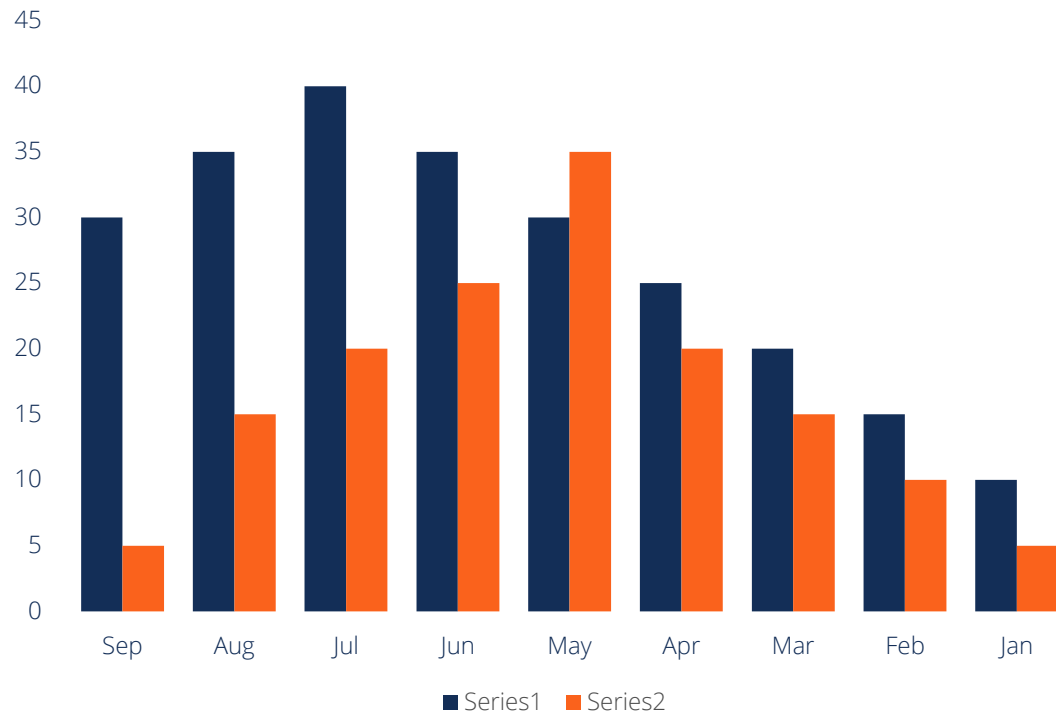
|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 715 | 173 | 927 | 885 | 533 |
| 107 | 5   | 606 | 442 | 75  |
| 145 | 589 | 425 | 22  | 937 |
| 798 | 778 | 694 | 555 | 137 |
| 490 | 904 | 336 | 820 | 822 |
| 183 | 978 | 971 | 658 | 897 |
| 247 | 93  | 433 | 669 | 419 |
| 301 | 257 | 642 | 994 | 755 |
| 114 | 731 | 666 | 142 | 783 |
| 457 | 168 | 477 | 658 | 342 |

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 172 | 900 | 528 | 210 | 439 |
| 268 | 875 | 458 | 110 | 530 |
| 141 | 246 | 326 | 498 | 615 |
| 631 | 187 | 995 | 538 | 291 |
| 678 | 389 | 983 | 265 | 914 |
| 961 | 437 | 626 | 420 | 982 |
| 844 | 281 | 26  | 201 | 931 |
| 948 | 969 | 948 | 547 | 219 |
| 384 | 448 | 99  | 561 | 604 |
| 216 | 28  | 392 | 184 | 825 |

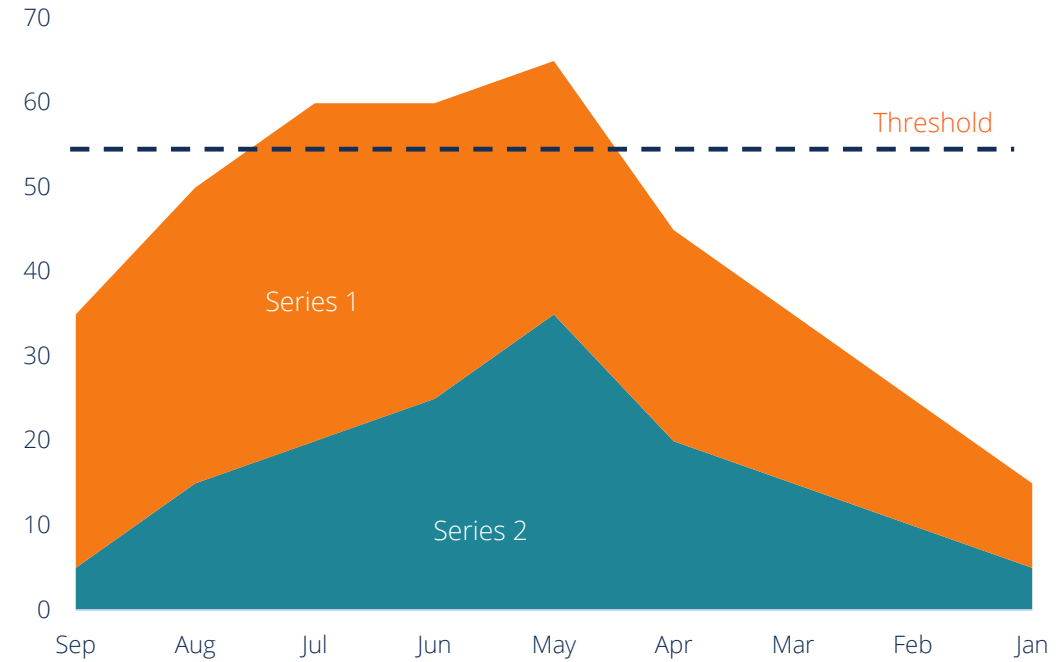
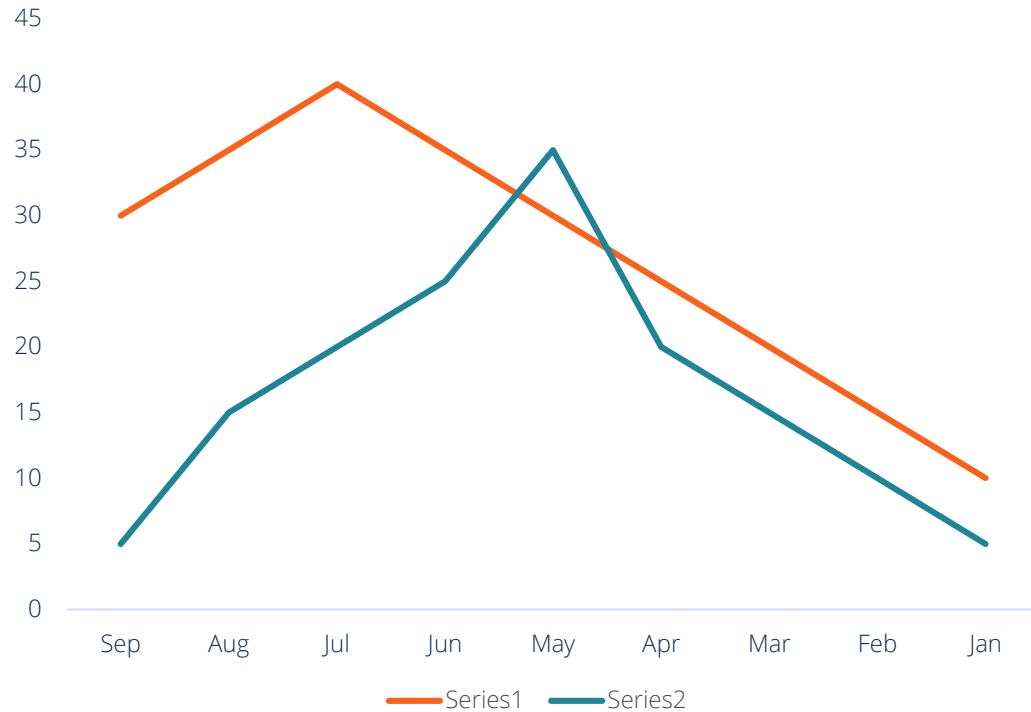
# Incorporating the attributes with charts



# Incorporating the attributes with charts



# Incorporating the attributes with charts

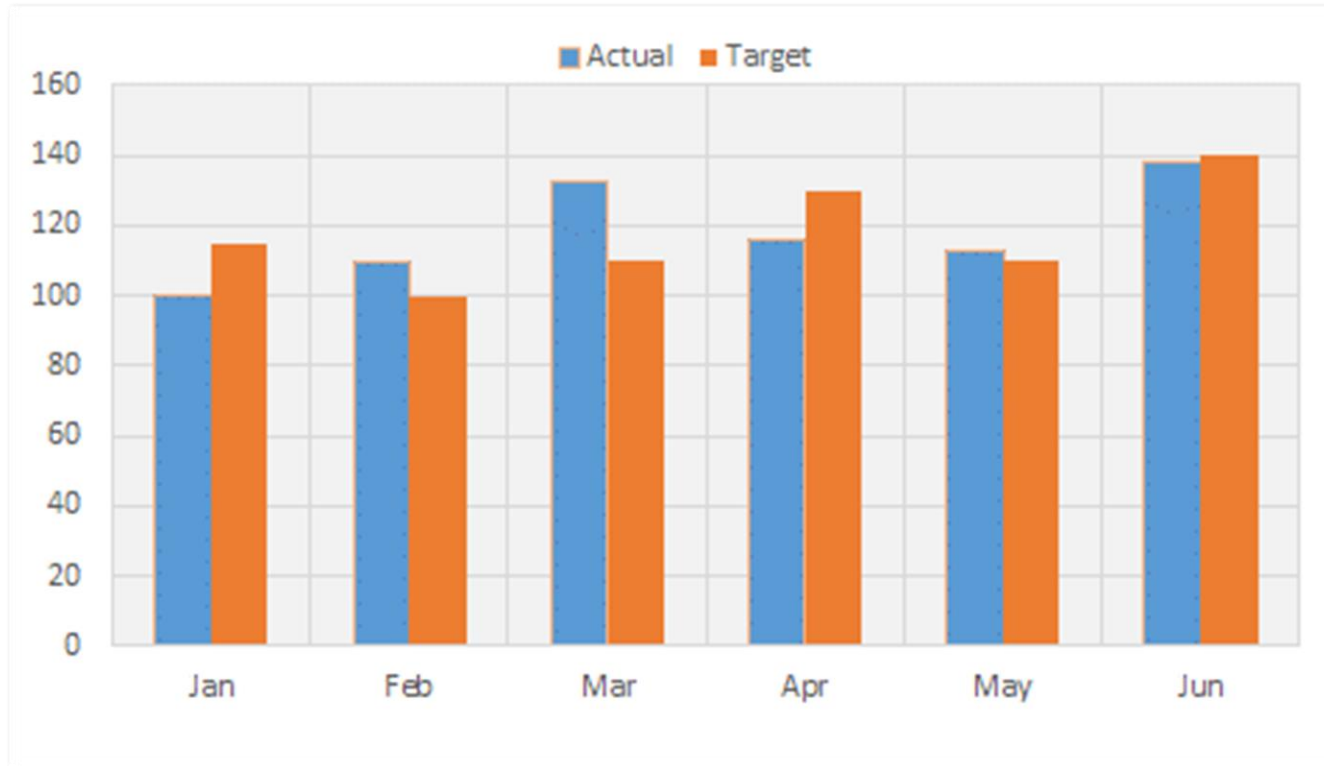




# Focusing Attention Exercise

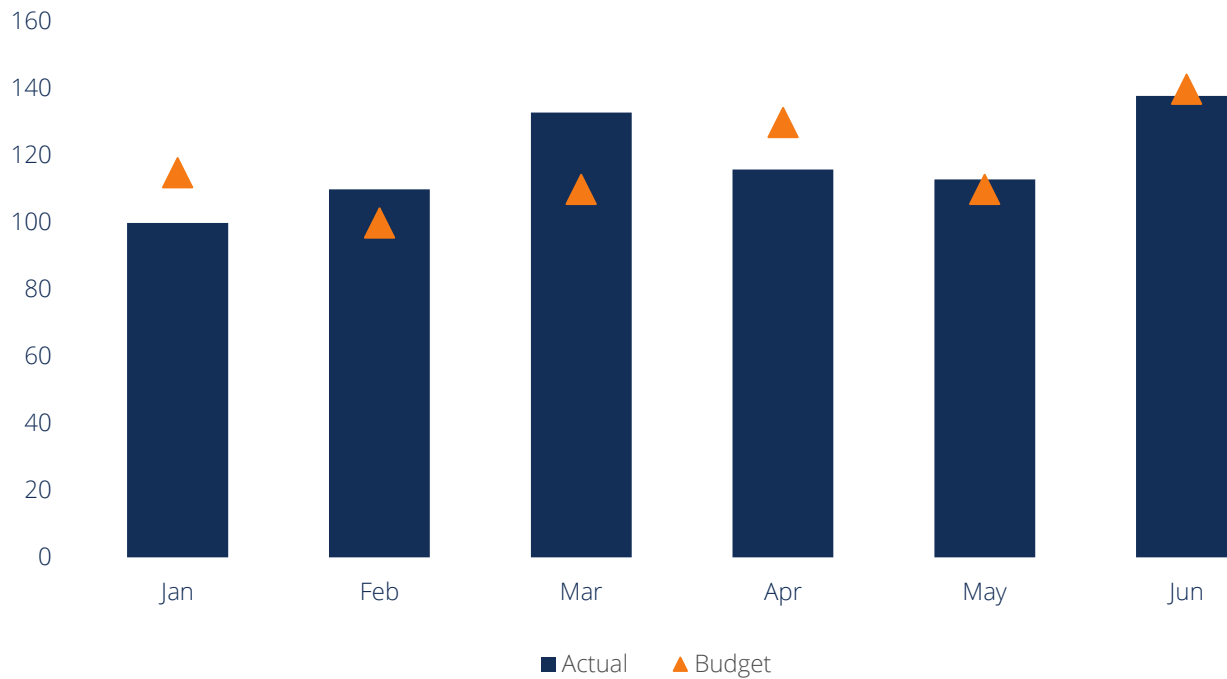


# In Excel, make at least 6 changes to improve this graph



# Solution

Actual vs Budget





# Design Principles

# Session objectives



Use guides to make messages intuitive



Make the information accessible to all



The importance of aesthetics

# Guides

---



A guide indicates to someone how something should be used



Use can use guides to clearly illustrate information in charts



Highlight important information



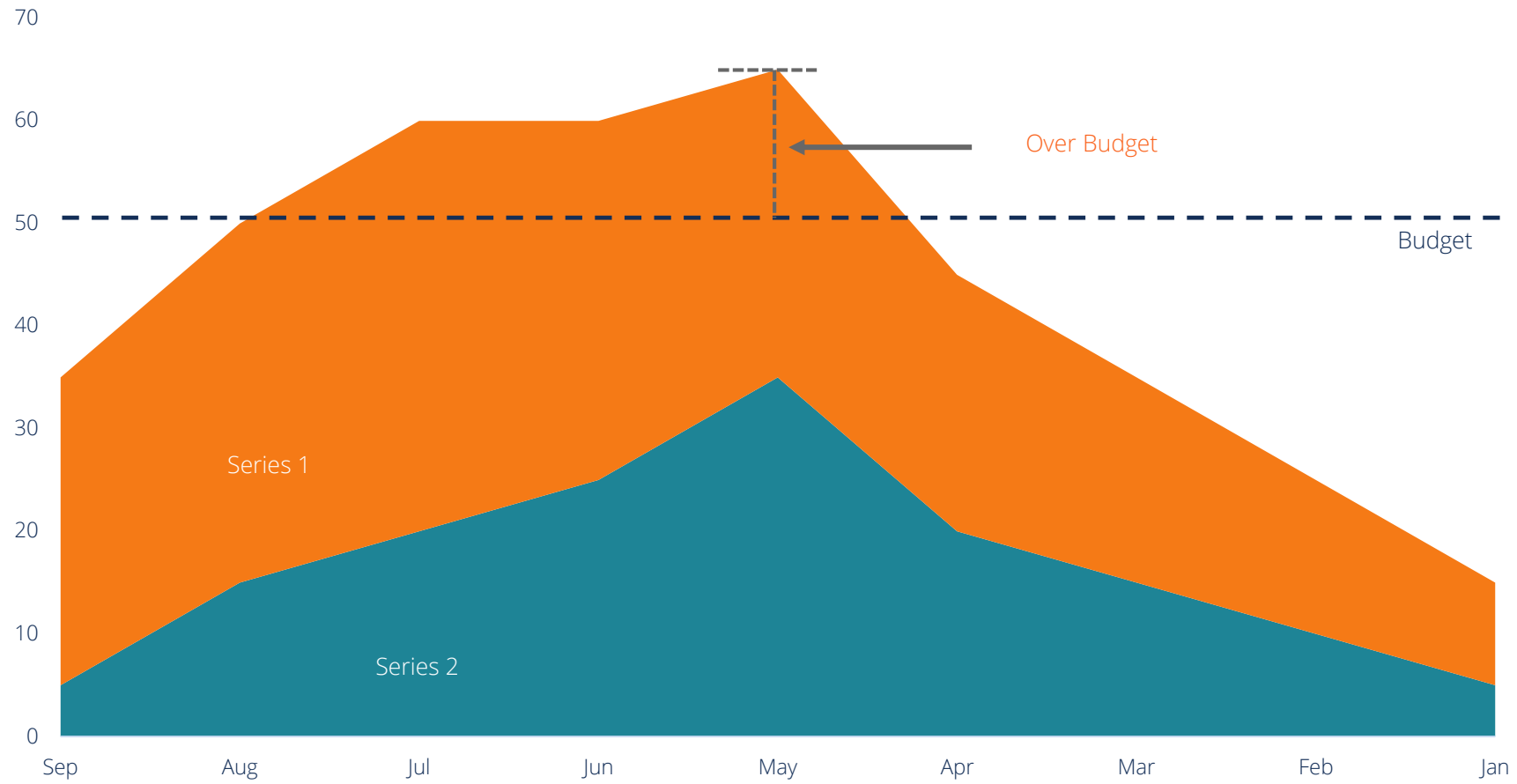
Eliminate distractions



Isolate the key message



# Guides



# Accessibility

---



Anyone from any background can understand the information



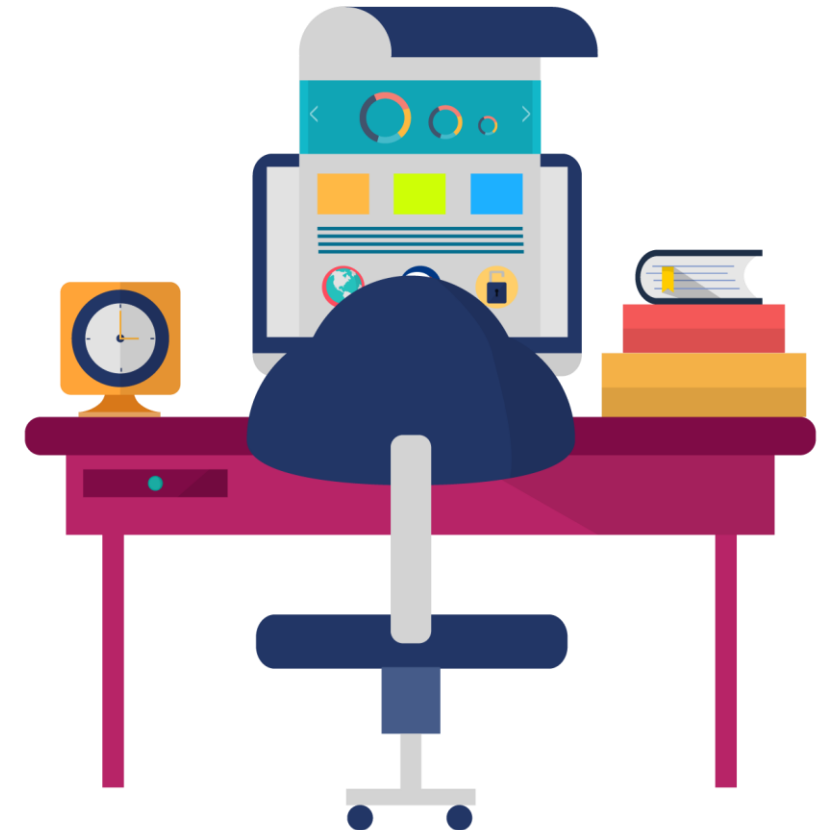
Keep it clean



Use common language

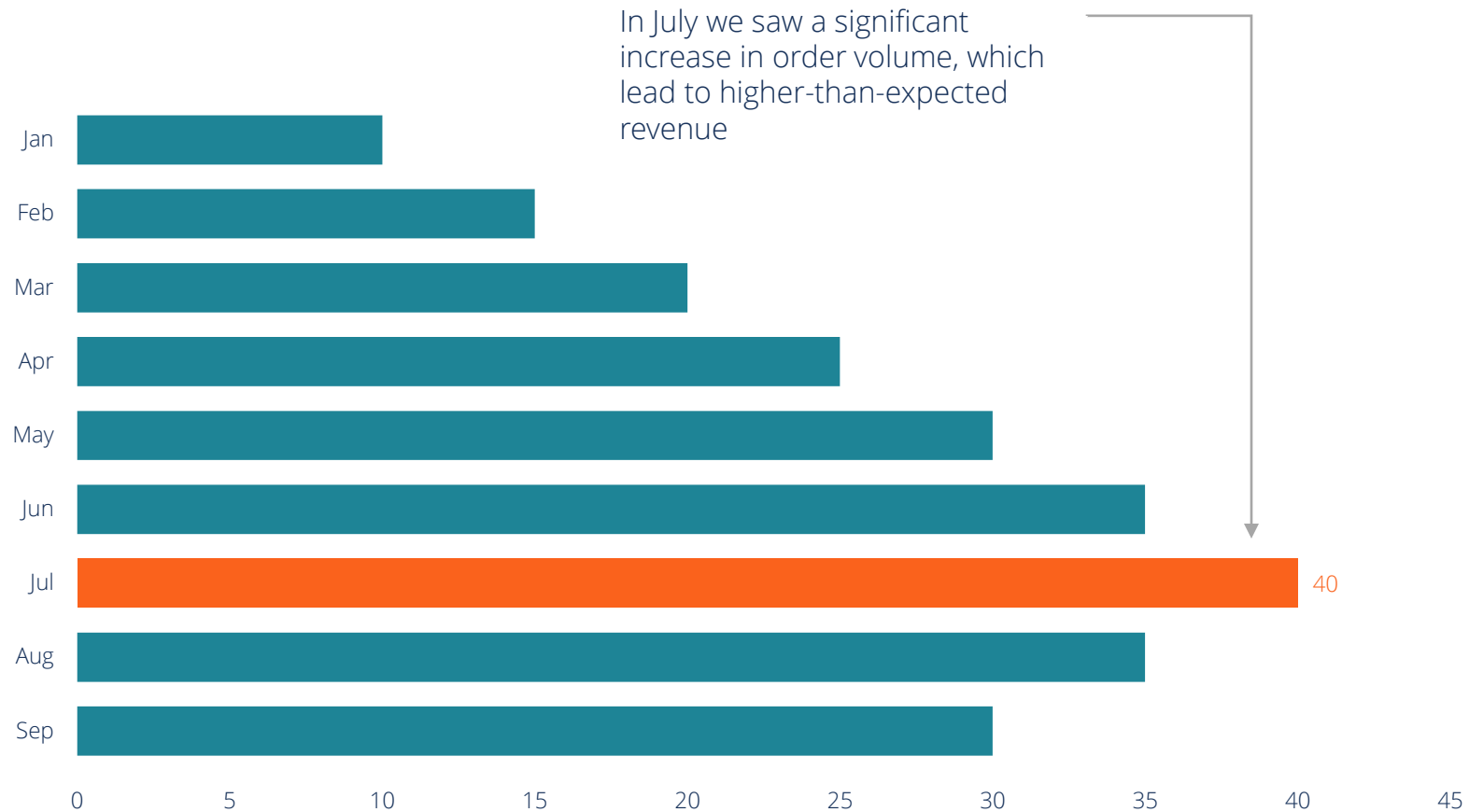


Remove complexity





# Accessibility



# Aesthetics

---



Not only are beautiful charts more pleasing to look at, they are more likely to be accepted as “true”



Be careful with color



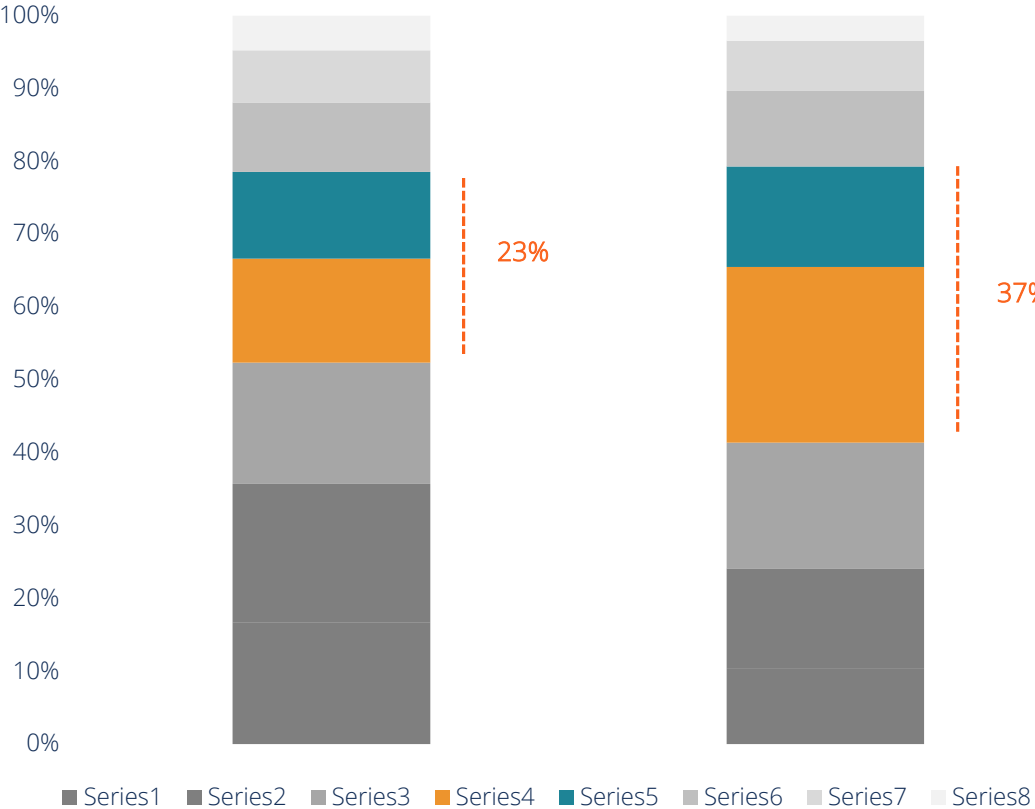
Alignment is critical



Use white space intelligently



# Aesthetics





# Dashboards



# Session objectives



Why use dashboards



Executive decision making



How to build a dashboard



3 Step by Step Examples

# Why use dashboards



Quickly digest a large amount of information



Evaluate historical performance



Illustrate a forecasts and scenarios



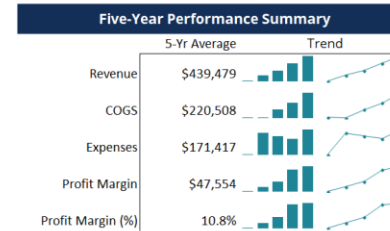
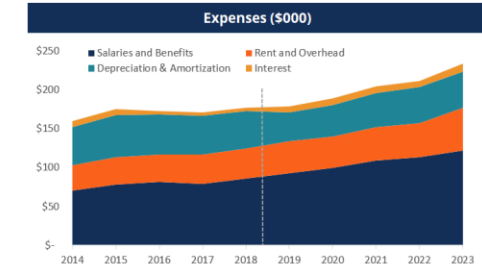
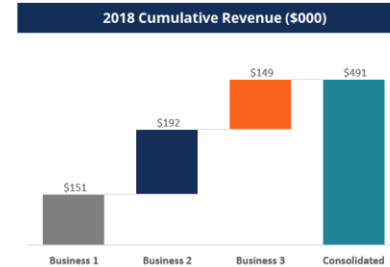
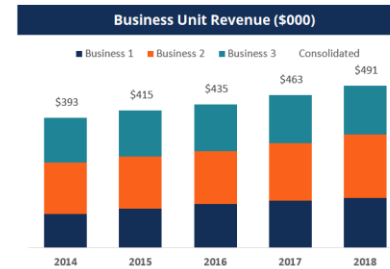
Output the details of a financial model



Regular company updates

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## DASHBOARD TEMPLATE



**Income Statement FY 2018**

|                   | Actual    | Plan      | Variance  | Var%   |
|-------------------|-----------|-----------|-----------|--------|
| Revenue           | \$490,923 | \$475,000 | \$15,923  | 3.4%   |
| COGS              | \$243,130 | \$238,000 | \$5,130   | 2.2%   |
| Expenses          | \$177,712 | \$186,000 | (\$8,288) | (4.5%) |
| Profit Margin     | \$70,081  | \$73,500  | (\$3,419) | (4.7%) |
| Profit Margin (%) | 14.3%     | 15.5%     | (1.2%)    | (7.7%) |

**P&L Summary 2018**

|                             |           |
|-----------------------------|-----------|
| Revenue                     | \$490,923 |
| COGS                        | \$243,130 |
| Expenses                    |           |
| Salaries and Benefits       | \$85,735  |
| Rent and Overhead           | \$39,236  |
| Depreciation & Amortization | \$48,241  |
| Interest                    | \$4,500   |
| Total Expenses              | \$177,712 |
| Net Operating Profit        | \$70,081  |

**Balance Sheet Summary 2018**

|  |           |
|--|-----------|
| Assets                                   |           |
| Current Assets                           | \$395,685 |
| Non-current Assets                       | \$589,610 |
| Total Assets                             | \$985,295 |
| Liabilities                              |           |
| Current Liabilities                      | \$135,374 |
| Long-term Liabilities                    | \$384,962 |
| Shareholders' Equity                     | \$464,959 |
| Total Liabilities & Shareholders' Equity | \$985,295 |

# Executive decision making

My time is extremely limited

What are the key takeaways?

What should I be worried about?

What should we change?

What is going well?

What should we do more of?

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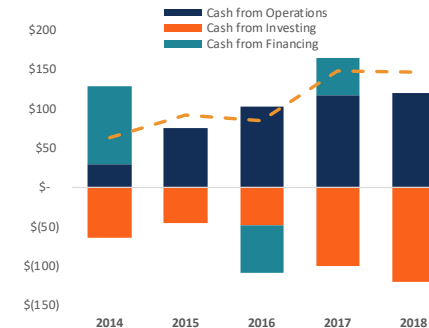
## DASHBOARD TEMPLATE



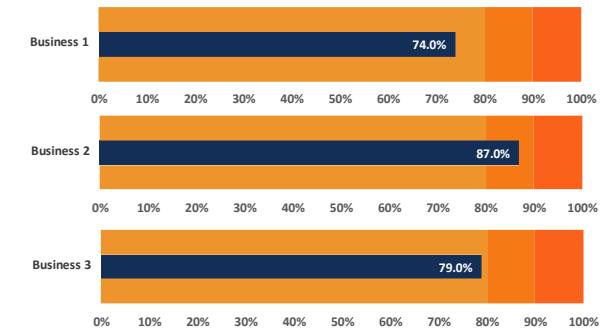
### 2018 Net Earnings Waterfall (\$000s)



### Cash Flow and Cash Balance (\$000s)



### 2018 Productivity Rate





# How to build a dashboard

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## Planning

What metrics are most important for this business?

What time periods are most relevant?

Who is going to read this?

What decisions will they make from it?

## Designing

Size and orientation

Charts versus tables, versus text

Design principles

Corporate style guide

Multiple iterations... lots of tinkering

# How to build a dashboard

---

SWITCH TO EXCEL RECORDING

LIVE DEMONSTRATION





## Conclusion

# Session objectives



Harness the power of visual communication



Understand your audience and the context



Design clear and effective, charts, graphs & images



Focus your audience's attention on the most important points



Apply best practices for design principles



Tell the story you want to tell



Build persuasive presentations



Design insightful dashboards



Become a world class financial analyst



# Advance your career

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Be it known by all those present, that the board of directors of  
the Corporate Finance Institute® have conferred upon

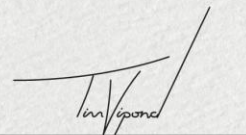
YOUR NAME

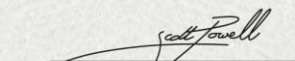
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pertaining to that degree. In testimony whereof we have  
hercunto subscribed our names on



  
Chair of the board

  
Director

  
Director